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PROFESSOR A. REIFENBERG 1899-1953

IN MEMORIAM

THE *Israel Exploration Journal* has suffered a grievous loss by the untimely death of its founder and editor-in-chief, Professor A. Reifenberg, who died after a long illness on 27 August 1953 at the age of 54.

Reifenberg was born in Berlin on 8 March 1899. He was educated at German high schools and universities, and graduated at the University of Giessen with a Dr. phil. in Agricultural Chemistry. He had been active in the Zionist movement from his youth, and in 1920 settled in Palestine, spending his first two years as an agricultural labourer at Kinnereth in the Jordan Valley. In 1922 he came to Jerusalem to work in the Laboratory for Agricultural Chemistry of the Government Department of Agriculture. When in 1924 preparations were made for the foundation of the Hebrew University, he joined its staff from the very beginning. He was at first attached to the Institute of Chemistry, and later became the founder and head of the Department of Soil Science. He was appointed Associate Professor in 1947 and Professor of Soil Science in 1952. He was the first Dean of the Faculty of Agriculture and served from 1950 to 1952 as Dean of the Faculty of Mathematics and Science.

From the early days of Reifenberg's scientific career it was evident that he was not only a laboratory researcher but a field worker as well. The common denominator of all his scientific work was a thorough acquaintance with conditions

in the field and a consequent freshness of approach very far removed from armchair science.

Professor Reifenberg's contributions to soil science were inspired on the one hand by his familiarity with the peculiar climatic and topographical conditions of the Mediterranean countries, and on the other hand by systematic laboratory work and his knowledge of chemistry and physiology. His main discovery in the laboratory was the peptising activity of colloidal silica, which is able to bring even ignited iron oxide into solution. On the basis of this established fact, he was able to formulate his theory of the red soil (terra rossa) formations in the Mediterranean, which are a soil type characteristic of this climate. According to this theory silica-peptised colloidal iron solutions are brought up to the surface through the parent rock during the rainless summer months by capillary flow, leaving a silica-iron deposit as newly formed soil on top of the rocks as the water is evaporated. In conjunction with this theory, but for much wider use, Reifenberg formulated a precipitation-evaporation index to define soil formation rate. With the aid of this factor combined with geological data, he was the first to classify Israel soils. His views are laid down in his book *The Soils of Palestine,* which is now in its second edition in English and is considered the standard work on the subject. Reifenberg made an important contribution to the classification of soils in general by stressing the relationship between the chemical compositon of the clay fraction and climatic soil types.

Investigations initiated by Reifenberg also cleared up the origin of the red sandy soils of the coastal plain of Palestine. In the course of these studies, the processes of coastal sand deposition and erosion were elucidated by mineralogical analyses. Here again laboratory work was linked successfully with field work, this time archaeological. In a detailed study of the Caesarea region, Reifenberg discovered that the old aqueduct to this ancient city, now covered by sand, was a suitable indicator for exact measurement, and could settle such disputed questions as the rate of sand movement, erosion and vertical isostatic movements of the coast.

In agricultural chemistry we owe to Reifenberg our earliest information on such problems as the possibilities of Huleh-peat, the influence of phosphate on germination, salt-tolerance in citrus-grove irrigation water as well as the tolerance-increasing property of potash and phosphate fertilization, the possible industrial uses of citrus peel and the production of phosphate fertilizers from local phosphate rocks.

Reifenberg's work on soil science directed his attention to one of the major problems of this country: soil erosion and its prevention. He was an active member of the Soil Conservation Board of the Department of Agriculture and published a number of papers which drew attention to this scourge of the Holy Land and advocated remedial measures. In connection with his work in other fields he amassed a great deal of evidence on the gradual decline of the soil and of agriculture in the Middle East generally and in Palestine in particular, a decline caused by soil erosion and mismanagement of the land. He published this material in a richly illustrated volume in Hebrew, entitled *The Struggle of the Desert and the Sown,* an English edition of which is in preparation.

His studies of the soil of Israel in the past caused Reifenberg to take a deep interest in the ancient history and archaeology of this country. His speciality was Palestinian numismatics, and ancient Jewish coins in particular. His large collection is among the best and most complete on this subject. Reifenberg became a recognised authority on Jewish coins and published a large number of papers and several books on the subject. He was the first president of the Israel Numismatic Society, founded in 1951.

His interest in archaeology, however, was by no means limited to numismatics. Together with his friend and colleague Professor L. A. Mayer, he explored several ancient synagogues, including the one at Eshtemoa, south of Hebron, and that at Naveh in the Hauran. (He later chose the beautiful lintel from Naveh as the cover-design of the *Israel Exploration Journal.*) Among his many contributions to archaeology the discovery of an ancient Hebrew inscription at Siloam near Jerusalem is of special importance. Reifenberg was for many years a member of the Committee of the Israel Exploration Society. His scholarly works on *Ancient Jewish Coins, Ancient Hebrew Seals* and *Ancient Hebrew Art* became deservedly popular.

His many and varied scientific activities did not, however, preclude him from taking an active part in public life, especially in connection with defence problems. In World War II he volunteered for service in a Palestinian unit of the British army, although over age. While he was on active service, the boat carrying his unit was torpedoed off Malta. Rescued after a prolonged stay in the sea, Reifenberg was left with a heart ailment which became worse during later years, especially as he never spared himself from any exacting duty.

With the renaissance of the State of Israel, Reifenberg became keenly aware of the need for a journal which would bring the results of research in Israel to

scholars abroad. He therefore enlisted the necessary scientific and financial support and published, late in 1950, the first issue of the quarterly *Israel Exploration Journal*.

With Professor Reifenberg science in Israel has lost a man who rendered distinguished service both within his own professional field and outside it. He was one of the few broad-minded enough to look beyond the barriers of conventional scientific disciplines at science as a whole. Above all, Reifenberg was distinguished by sterling qualities of character; he was always ready to promote a case he considered just, to help his friends and the younger scholars by advice and guidance, and to do his duty as he saw it, at whatever cost to himself.

This Journal owes its existence and development to his combination of initiative and tenacity. To the editors, who will endeavour to continue his work in his spirit, his scientific and intellectual honesty and his sense of proportion will be a never-failing guide.

Sumerian Historiography*

S. N. KRAMER

University of Pennsylvania Museum
Philadelphia, Pa.

THE Sumerians, it is safe to say, produced no historiography in the generally accepted sense of the word. Certainly no Sumerian man of letters wrote history as the modern historian conceives it, in terms of unfolding processes and underlying principles. Bound by his particular world-view, the Sumerian thinker saw historical events as coming ready-made and 'full-grown, full-blown' on the world scene, and not as the slow product of man's interaction with his environment. He believed, for example, that his own country Sumer, which he knew as a land of thriving cities and towns, villages and farms, in which flourished a well developed assortment of political, religious, and economic institutions and techniques, had always been more or less the same from the very beginning of days—that is, from the moment the gods had planned and decreed it to be so, following the creation of the universe. That Sumer had once been desolate marshland with but few scattered settlements, and had only gradually come to be what it was after many generations of struggle and toil, marked by human will and determination, man-laid plans and experiment and diverse fortunate discoveries and inventions—such thoughts probably never occurred even to the most learned of the Sumerian sages.

Moreover, the psychological techniques of definition and generalization which the modern historian takes more or less for granted seem to be unknown to the Sumerian teacher and thinker, at least on the level of explicit formulation. Thus, in the linguistic field, we have quite a number of Sumerian grammatical lists and these imply an awareness of numerous grammatical classifications, but nowhere do we find a single explicit grammatical definition or rule. In mathematics we find many tables, problems and solutions, but no statement of general principles, axioms and theorems. In what might be termed the 'natural sciences', the Sumerian teachers compiled long lists of trees, plants, animals and stones; the reason for the particular order of the objects listed is

* This paper is published in Hebrew in *Eretz-Israel*, 3, 1953 (Cassuto Memorial Volume), pp. 51-57.

still obscure, but certainly it does not stem from a fundamental understanding of botanical, zoological, or mineralogical principles and laws. The Sumerians compiled numerous law-codes, containing no doubt in their original complete state hundreds of individual laws, but nowhere is there a statement of legal theory. The Sumerian myths, hymns and proverbs reveal quite a number of accepted religious beliefs and ethical practices, but nowhere are these formulated in philosophical or theological terms.[1] Just so, in the field of history, the Sumerian temple and palace archivists noted and wrote down a varied assortment of significant events of a political, military and religious character—the well known date-formulae illustrate this clearly. But this did not lead to the writing of connected and meaningful history; lacking the relatively recently discovered insight that history is a constantly changing process, and seemingly ignorant of the methodological tool of comprehensive generalization, history in the modern sense of the word was a psychological impossibility for the Sumerian literature.

Now while it is not surprising, in view of what has just been said, that the Sumerian men of letters failed to produce a 'modern' type of historiography, it does seem rather strange that even historical works of the kind current among the Hebrews and Greeks were unknown in Sumer. In fact, no Sumerian writer or scribe, as far as we know, ever made a conscious effort to write a cultural or political history of Sumer or any of its component states, let alone of the then known world. To be sure, the Sumerian men of letters had originated and developed quite a number of written literary genres: myths and epic tales, hymns and lamentations, proverbs and essays, and several of these—the epics and lamentations in particular—do utilize to a very limited extent what might be termed historical data. But the thought of preparing a connected history, prompted either by the love of learning or even by what we would call purposes of propaganda, never seemed to occur to the Sumerian teachers and writers.[2] The documents that come closest to history in our sense are the votive inscrip-

[1] There is the possibility of course that the Sumerian teachers and sages did resort to some sort of definition and generalization in their discussions and in their oral explanations to the students and disciples for whose benefit the lists were compiled as scribal 'text-books', but because of the very nature of the problem this will always remain a moot point.

[2] There is also now available a fragmentary text dating from about 1700 B.C. which contains what seems to be a legendary chronicle of the events leading up to the rise to power of Sargon the Great of Akkad; cf. *Textes religieux sumériens du Louvre*, II, No. 73 and a newly excavated and still unpublished small tablet from Nippur. But from the brief extract of the text available at the moment, it is difficult to assess its historical significance and value.

tions on statues, stelae, cones, cylinders, vases, tablets, etc., but the events recorded on them are merely a by-product of the urge to find favour with the gods. The inscriptions usually record single contemporaneous events, and these in very brief form. Nevertheless there are several among them which do refer back to earlier circumstances and events, and these reveal a sense of historical detail which for that early date—about 2400 B.C. according to the short chronology—is without parallel in man's recorded past. Before turning to these documents, however, it is essential to have some idea of the world-view which permeates them, otherwise their contents will remain obscure and their style unintelligible.

The cosmos, according to Sumerian philosophers and theologians, was created, guided and controlled in accordance with the well-laid plans and duly prescribed laws of a divine pantheon which consisted of a large group of invisible living beings, man-like in form, but superhuman and immortal. The cosmic realms, the astral bodies, the atmospheric forces, the earth's natural and cultural phenomena—all these were deemed to be in the charge of one or another anthropomorphic deity who guided their activities in accordance with special rules and regulations. This pantheon was conceived to function as an assembly with a king at its head, and the most important groups within it were the four creating deities, who had but to lay their plans, say the word, and it came to be, the seven gods who 'decree the fates', and the fifty deities known as the 'great gods'. Man was created for one purpose only: to serve the gods by supplying them with food, drink, and shelter, so that they might have full leisure for their divine activities. To ensure the success of this plan, the gods established lands and cities, appointed one or another of the pantheon as the divine ruler of each, and these in turn selected their human representatives. Furthermore, in order to make the cultural entities and phenomena which constitute what is generally described as 'civilization' operate smoothly and effectively, the gods devised a set of rules or regulations, known to the Sumerians by the word *me*: there were *me*'s to guide and control the office of kingship, the priestly officials, the ritual paraphernalia, the arts and crafts, some of the more important mental and emotional human attitudes, as well as sundry beliefs and dogmas; in fact there were *me*'s for each of the hundred-odd elements which, according to the ancient Sumerian thinkers, constituted their fabric of culture.[3]

[3] For a more detailed discussion of the Sumerian world-view, cf. *Journ. Cuneiform. Stud.*, 2, 1948, p. 39 ff. As for the *me*'s, the following is the legible and more intelligible portion of the list in the

A world-view of this kind, satisfied with the superficial explanation that all events and phenomena can be produced ready-made and without further ado by the command of the gods, offers little intellectual incentive for an historical approach which seeks to interpret events in terms of man and his achievements over the centuries. In spite of this psychological limitation, there came to the fore in Sumer as early as the twenty-fifth century B.C.[4] a group of writers who succeeded in fusing their theological world-view with their drive for historical fact in such a way as to produce a fascinating if sketchy record of a number of political, military, and economic incidents spread over several generations. These early 'historians' lived in Lagash, a city in southern Sumer which from about 2500 B.C. played a dominant political and military role for over a century. It was the seat of an active dynasty of rulers, founded by Ur-Nanshe and including Ur-Nanshe's conquering grandson Eannatum, who for a brief period succeeded in making himself ruler of almost all Sumer and what later came to be known as Akkad,[5] Eannatum's brother Enannatum, and the latter's son Entemena. It was not until the reign of Urukagina, the eighth ruler after Ur-Nanshe, that Lagash's star finally set; Urukagina was defeated by Lugalzaggisi of Umma, who was in turn conquered by the great Sargon of Akkad. It is the political history of this period, from the days of Ur-Nanshe to those of Urukagina, that is known to us from a varied group of contemporary records prepared by anonymous 'historians' who, presumably as palace and temple archi-

exact order given by the ancient Sumerian writers themselves: high-priesthood; godship; the exalted and enduring crown; the throne of kingship; the exalted sceptre; the royal weapon (?); the exalted dais; shepherdship; kingship; lasting queenship; the office of high priestess; (the priestly offices) *išib*, *lumah*, and *gutug;* truth; descent into the nether world (i.e. death); ascent from the nether world (i.e. resurrection); (the eunuchs) *kurgarra*, *girbadara* and *sagursag;* the (battle) standard; the flood; weapons (?); sexual intercourse; prostitution; legal (?) speech; libel (?); art; the cult chamber (?); 'hierodule of heaven'; the oracle (?); music; eldership; heroism; power; enmity; straightforwardness; the destruction of cities; lamentation; rejoicing of the heart; falsehood; the rebel land; goodness; justice; craft of the woodworker, metal worker, scribe, smith, leatherworker, builder, and basket-weaver; wisdom; attention; holy purification; fear; terror; strife; peace; weariness; victory; counsel; the troubled heart; judgment; decision; (the musical instruments) *lilis*, *ub*, *mesi*, and *ala*. The list is repeated four times in the course of a myth involving the popular Sumerian goddess Inanna. Cf. for the present my *Sumerian Mythology*, p. 64 ff.

[4] This paper uses the 'short chronology' throughout, cf. e.g. W.F. Albright: *From the Stone Age to Christianity*. Baltimore, 1940, p. 364.

[5] For a detailed study of Eannatum's reign, cf. A. Poebel, *Publ. Babylonian Sect., Univ. Mus., Univ. of Pennsylvania*, IV, p. 159 ff. The phrase 'Sumer and Akkad' for the entire land now generally called Babylonia did not come into use until the Third Dynasty of Ur. Its possible equivalent in earlier times is still unknown; for an interesting relevant suggestion, cf. A. Poebel, *Oriental Studies dedicated to Paul Haupt*, p. 244 ff; cf. also infra, n. 16.

vists, had access to first-hand information on the events they described. Two of these records are outstanding in their fulness of detail and clarity of meaning, and these may well serve to illustrate the style, method, and mood of Sumerian historiography.[6]

The first document was prepared by one of the archivists of Entemena, the fifth in the line of Lagash rulers starting with Ur-Nanshe; the text was found inscribed in almost identical language on two clay cylinders.[7] Its primary purpose is to record the restoration of the boundary ditch between Lagash and Umma, which had been destroyed in the course of the most recent struggle between the two cities. But in order to set the event in its proper historical perspective, the archivist deemed it advisable to describe the political background. He therefore proceeds to recount, very briefly to be sure, some of the more important details in the struggle for power between Lagash and Umma from as far back as his written records reached—i.e., from the days of Mesilim, who was suzerain of Sumer and Akkad about 2600 B.C. In doing so, however, he does not use the straight factual form of narrative writing expected of the historian. Instead he strives to fit the historical events into the accepted framework of his theocratic world-view, and thus evolves a unique literary style which constantly interweaves the deeds of men and gods and often fails to distinguish between them. As a consequence, the actual historical incidents are not readily apparent from the text of the document, but must be painstakingly extracted and discriminatingly rounded out and filled in with the help of relevant data obtained from other Sumerological sources. Cleared of its theological cloak and polytheistic phraseology, the document records the following series of political events in the history of Sumer, which can be verified in large part from other extant sources.[8]

[6] To date, practically all this 'historical' material comes from Lagash, modern Tello, which the French have excavated on and off for more than half a century. But there is every reason to believe that similar 'historical' documents were prepared in a number of Sumerian cities which still await the hand of the excavator. As for the Lagash material, most of it was copied with superb care and accuracy by the late François Thureau-Dangin. For full details of the Lagash excavations, cf. the very useful volume *Tello,* recently published by André Parrot (Paris, 1948).

[7] For the text of one of these cylinders, cf. F. Thureau-Dangin: *Die sumerischen und akkadischen Königsinschriften* (henceforth *SAK*), p. 36 ff; for the other, cf. Nies and Keiser: *Historical, Religious and Economic Texts,* No. 1. There also exists a fragmentary duplicating excerpt which is part of a longer text probably written in the days of Urukagina, cf. *SAK,* p. 54 ff; also infra, n. 28.

[8] The summary analysis of the contents of this document and the literal translation which follows are based almost entirely on Arno Poebel's paper in *Oriental Studies dedicated to Paul Haupt,* pp. 220-271.

In the days when Mesilim was king of Kish, and therefore at least the nominal suzerain of Sumer and Akkad, there arose a border dispute between Lagash and Umma, two Sumerian city states which evidently acknowledged Mesilim as their overlord. The latter proceeded to arbitrate the controversy by measuring off a boundary line between the two cities in accordance with what was given out to be an oracle of Sataran, a deity in charge of settling complaints. He also erected an inscribed stele to mark the spot and prevent future disputes. However, the decision (which was presumably accepted by both parties) seemed to favour Lagash rather than Umma. In any case, not long afterwards Ush, an *ishakku* of Umma, violated the terms of the decision; the time is not stated, but there are indications that this violation took place not long before Ur-Nanshe founded his dynasty at Lagash. Ush ripped out Mesilim's stele to indicate that he was not bound by its terms, and then crossed the border and seized the northernmost territory belonging to Lagash, known as the Guedinna. This land remained in the hands of the Ummaites until the days of Eannatum, the grandson of Ur-Nanshe, a military leader of note whose conquests had made him so powerful that he dared assume, at least for a brief period, the title 'king of Kish', and thus claim the overlordship of all Sumer and Akkad. It was this Eannatum, according to our document, who attacked and defeated the Ummaites, made a new border treaty with Enakalli, then the *ishakku* of Umma, dug a ditch in line with the new boundary which would help ensure the fertilityof the Guedinna, erected there for the purpose of future record the old Mesilim stele, as well as several stelae of his own, and also constructed a number of buildings and shrines to several of the more important Sumerian deities. Moreover, to help minimize a possible source of future conflict between Umma and Lagash, he set aside a strip of fallow land on the Umma side of the boundary ditch as a kind of no-man's land.[9] Finally Eannatum, probably in an effort to alleviate the feelings of the Ummaites to some extent, since he was eager to expand his conquests in other directions, agreed to let them farm the fields lying in the Guedinna and even further south. But, he granted this only on condition that they pay the Lagash rulers a share of the crops for the use of the land, thus assuring himself and his successors of a considerable revenue.

Thus far Entemena's archivist has dealt only with past events in the conflict between Umma and Lagash. He now turns to the most recent struggle between

[9] This interesting bit of information is found only in the cylinder published by Nies and Keiser, *op. cit.* (supra, n. 7).

the cities, of which he was in all probability a contemporary witness—the battle between Ur-Lumma, the son of the unfortunate Enakalli, who had been compelled to agree to Eannatum's 'shameful' terms, and Entemena, the son of Enannatum, and nephew of Eannatum. For in spite of Eannatum's mighty victory over the Ummaites, it took them only a generation or so to recover their confidence, if not their former strength. In any case Ur-Lumma repudiated the bitterly rankling agreement with Lagash, and refused to pay Enannatum the revenue imposed upon Umma. He then proceeded to 'dry up' the boundary ditches; ripped out and set fire to both Mesilim's and Eannatum's stelae with their irritating inscriptions; and destroyed the buildings and shrines which Eannatum had built along the boundary ditch to warn the Ummaites that they must not trespass on Lagash territory. He was now set to cross the border and enter the Guedinna. Further to assure himself of victory, he sought and obtained the military aid of the non-Sumerian ruler to the north of Sumer who, no doubt under the title 'king of Kish,' laid claim to the suzerainty of the entire land of Sumer and Akkad. The two forces met in the Gana-ugigga of the Guedinna, not far south of the border. The Ummaites and their allies were under the command of Ur-Lumma himself, while the Lagashites were led by Entemena, since his father Enannatum must have been quite an old man at the time. The Lagashites were victorious; Ur-Lumma fled, hotly pursued by Entemena and many of his troops were waylaid and killed.

But Entemena's victory proved to be ephemeral. Upon Ur-Lumma's defeat and probable death, a new enemy appeared on the scene: Il, the *sanga*[10] or temple-head of a city probably named Hallab, situated not far to the north of Umma. This Il had evidently been shrewd enough to 'wait it out' while Entemena and Ur-Lumma were struggling for a decision. But as soon as the battle was over, he attacked the victorious Entemena, met with initial success, and penetrated deep into Lagash territory. To be sure, he was unable to hold on to his gains south of the Umma-Lagash border. But he did succeed in making himself *ishakku* of Umma. He then proceeded to show his contempt for the Lagash claims in almost the same manner as his predecessor. He deprived the boundary ditches of the water so essential to the irrigation of the nearby fields and farms, and refused to pay all but a fraction of the revenue imposed upon Umma by the old Eannatum treaty. And when Entemena sent envoys to him

[10] At this period the *sanga* of a temple was probably its administrative head, while the *en* or 'high-priest' was its spiritual head.

demanding an explanation for his unfriendly acts, he answered by arrogantly claiming the entire Guedinna as his territory and domain. The issue between Il and Entemena, however, was not decided by war. Instead a compromise seems to have been forced upon them by a third party, probably once again the northern ruler who claimed overlordship over Sumer and Akkad as a whole. By and large the decision seemed to favour Lagash, since the old Mesilim—Eannatum line was retained as the fixed boundary between Umma and Lagash. On the other hand, nothing is said of compensation by the Ummaites for the revenue which they had withheld. Nor do they seem to be held responsible any longer for ensuring the water-supply of the Guedinna; this task is now up to the Lagashites themselves.

As was stated earlier, the preceding résumé of the historical events marking the struggle for power between Lagash and Umma is by no means self-evident from a first study of the text of our document; much of it is derived from what may be described as reading between the lines. The following literal translation of the inscription as a whole will help to show how this was done, and at the same time give the reader some idea of the rather unusual historiographic style developed by the Sumerian men of letters:

'Enlil,[11] the king of all the lands, the father of all the gods, marked off the boundary for Ningirsu and Shara by his steadfast word, (and) Mesilim, the king of Kish, measured it off in accordance with the word of Sataran, (and) erected a stele there. (But) Ush, the *ishakku* of Umma violated (both) the decree (of the gods) and the word (given by man to man), ripped out its (the boundary's) stele, and entered the plain of Lagash. (Then) did Ningirsu, Enlil's foremost warrior, do battle with (the men of) Umma in accordance with his (Enlil's) straightforward word; by the word of Enlil he hurled the great Shush-net upon them,[12] and heaped up their skeleton (?) piles in the plain in their (various) places. (As a result) Eannatum, the *ishakku* of Lagash, the uncle of Entemena, the *ishakku* of Lagash, marked off the boundary with Enakalli, the *ishakku* of Umma; led out its (the

[11] Enlil is the leading deity of the Sumerian pantheon (cf. *Journ. Amer. Orient. Soc.*, 63, 1943, p. 194, n. 10, for the connotation of the phrase 'king of all the lands'); Ningirsu and Shara are the tutelary deities of Lagash and Umma respectively. The sentence states the current belief that after the creation of the world, the two cities were allotted to the two gods as their personal possession and property, and that Enlil himself as the head of the gods had drawn the boundary lines between them. Evidently the author had no written records or oral tradition for the history of Lagash and Umma preceding the days of Mesilim, and therefore resorts to a general statement in conformity with the accepted world-view.

[12] For an attempt to represent this act pictorially cf. Parrot, *op. cit.* (supra, n. 6), p. 80.

boundary's) ditch from the Idnun (canal) to the Guedinna; inscribed (several) stelae along that ditch; restored Mesilim's stele to its (former) place; (but) did not enter the plain of Umma. He (then) built there the Imdubba of Ningirsu, the Namnunda-kigarra, (as well as) the shrine of Enlil, the shrine of Ninhursag,[13] the shrine of Ningirsu, (and) the shrine of Utu (the sun-god). (Moreover following the boundary settlement) the Ummaites could eat the barley of (the goddess) Nanshe (and) the barley of Ningirsu to the amount of one *karû* (for each Ummaite, and only) for interest; (also) he (Eannatum) levied a tax on them, (and thus) brought in for himself (as revenue) 144,000 'large' *karû*.[14] Because this barley remained unpaid---(besides) Ur-Lumma, the *ishakku* of Umma deprived the boundary ditch of Ningirsu (and) the boundary ditch of Nanshe of water;[15] ripped out its (the boundary ditch's) stelae (and) put them to fire; destroyed the dedicated (?) shrines of the gods which had been built in the Namnunda-kigarra; obtained (the help of) the foreign lands;[16] and (finally) crossed the boundary ditch of Ningirsu---Enannatum fought with him in the Gana-ugigga (where are) the fields and farms of Ningirsu, (and) Entemena, Enannatum's beloved son, defeated him. Ur-Lumma (then) fled, (while) he (Entemena) slew (the Ummaite forces) up unto Umma (itself); (moreover) his (Ur-Lumma's) elite force (consisting of) 60 soldiers he wiped out (?) on the bank of the Lumma-girnunta canal.[17] (As for) its (Umma's fighting) men, he (Entemena) left their bodies in the plain (for the birds and beasts to devour) and (then) heaped up their skeleton (?) piles in five (separate) places.

At that time (however) Il, the *sanga* of Hallab (?) ravaged (?) (the land) from Girsu to Umma. Il took to himself the *ishakku*-ship of Umma; deprived of

[13] Ninhursag is one of the four Sumerian creating deities; her main seat of worship was in the city of Adab.

[14] Both the translation and meaning of this sentence are uncertain. The' barley of Ningirsu' refers to the crops obtained by farming the fields of the Guedinna which belonged to Ningirsu's temple corporation, while the 'barley of Nanshe' refers to the crops obtained by farming the fields adjoining the Guedinna which belonged to the Nanshe temple corporation. The *karû* contains 3600 *kur*, each of which is equal to about 7 bushels.

[15] The 'boundary ditch of Ningirsu' and the 'boundary ditch of Nanshe' refer to the northern and southern parts of the same boundary ditch.

[16] That is, probably, the non-Sumerian northern ruler who claimed suzerainty over the entire land (now usually called) Babylonia, and perhaps even of some lands beyond. In Entemena's day it was probably one of the kings of the Akshak dynasty, cf. T. Jacobsen: *The Sumerian King List*, p. 181, and S. N. Kramer: New Light on the Early History of the Ancient Near East, *Amer. Journ. Archaeol.*, 52, 1948, pp. 156-164. Ref. p. 162, n. 14.

[17] A canal situated to the south of the main battlefield Gana-ugigga, whither a special force of Ur-Lumma had penetrated in order to fall upon Entemena from the rear.

water the boundary ditch of Ningirsu, the boundary ditch of Nanshe, the Imdubba of Ningirsu, that tract (of arable land) of the Girsu tracts which lies towards the Tigris, (and) the Namnunda-kigarra of Ninhursag; (and) paid (no more than) 3600 *karû* of the barley (due) Lagash. (And) when Entemena, the *ishakku* of Lagash, repeatedly sent (his) men to Il because of that (boundary) ditch, Il, the *ishakku* of Umma, the plunderer of fields and farms, the speaker of evil, said: 'The boundary ditch of Ningirsu, (and) the boundary ditch of Nanshe are mine'; (indeed) he (even) said: 'I shall exercise control from the Antasurra[18] to the Dimgal-abzu temple'. (However) Enlil and Ninhursag did not grant this to him.[19]

Entemena, the *ishakku* of Lagash, whose name was pronounced by Ningirsu, made this (boundary) ditch from the Tigris to the Idnun in accordance with the straightforward word of Enlil, in accordance with the straightforward word of Ningirsu, (and) in accordance with the straightforward word of Nanshe, (and) restored it for his beloved king Ningirsu and for his beloved queen Nanshe (after) he had constructed of bricks the foundation of the Namnunda-kigarra. May Shulutula, the (personal) god of Entemena,[20] the *ishakku* of Lagash, whom Enlil gave the sceptre, whom Enki[21] gave wisdom, whom Nanshe fixed upon (in her) heart, the great *ishakku* of Ningirsu, the man who had received the words of the gods, step forward (in prayer) for the life of Entemena before Ningirsu and Nanshe unto distant days.

The Ummaite who (at any future time) will cross the boundary ditch of Ningirsu (and) the boundary ditch of Nanshe in order to take to himself fields and farms by force, whether he be (really) an Ummaite or a foreigner[22]—may Enlil destroy him; may Ningirsu, after hurling his great Shush-net on him, bring down on him his lofty hand (and) his lofty foot; may the people of his city, having risen in rebellion, strike him down in the midst of his city.'

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[18] The Antasurra was in the more northerly part of the Guedinna while the Dimgal-abzu temple was in its more southerly part.

[19] It is this vague statement which points to the conclusion that the controversy between Il and Entemena, ending with the entire Guedinna once again in the hands of Entemena, was not settled by force of arms.

[20] According to the Sumerians each family and individual had a personal god to intervene for him with the other gods. In the case of the Ur-Nanshe dynasty, this god was named Shulutula, cf. B. Landsberger: *Materialien zum sumerischen Lexikon*, II, p. 106-107.

[21] Enki is the Sumerian god of wisdom.

[22] That is, perhaps one of the non-Sumerian allies of Sumer, cf. supra, n. 16.

Our second document is sociological rather than historical in character, and is of the utmost importance for the history of man's ethics and morals. The occasion of the inscription was the digging of a small canal by Urukagina, the unfortunate ruler of Lagash whose reign was terminated when its relentless enemies, the Ummaites, sacked the city and burned many of its public buildings. But the dedication of the canal, the actual reason for the inscription, is confined to a few sentences at the very end of the text. By far the larger part of the inscription is taken up with a detailed statement of a civic event which may well be described as the first social reform in man's recorded history. This reform which according to our anonymous author resulted from a change of administration due to the selection of Urukagina as ruler of Lagash, was directed against the abuses of 'former days,' particularly the flourishing of an obnoxious and ubiquitous bureaucracy, high taxation, and the appropriation by the palace of property belonging to the temple. Indeed, if we are to believe our ancient chronicler, Lagash had become the victim of a general state of lawlessness and oppression, and it took Urukagina to restore law and order in the city, and to 'establish the freedom' of its citizens. Before considering the actual text of the document, a background sketch, ever so brief to be sure, of Lagash's political, economic and social structure might be of value.[23]

The state of Lagash in the early third millenium B.C. consisted of a small group of prosperous towns, each clustering about a temple. Nominally the city of Lagash, like the other Sumerian city-states, was under the overlordship of the king of the entire land of Babylonia.[24] Actually its secular ruler was the *ishakku*, who ruled the city as the representative of the tutelary deity to whom, according to their world-view, it had been allotted after the creation. Just how the earlier *ishakku*'s came to power is uncertain; it may well be that they were selected by the freemen of the city, among whom the temple administrators, the *sanga*'s, played a leading political role.[25] In any case, the office became

[23] This background statement which emphasizes the prevalence of private ownership and individual enterprise in the early Sumerian city-state should be treated by the reader as highly tentative since the evidence at our disposal is very limited. Practically all the relevant inscriptional material comes from temples and other buildings, and not from private houses, and consequently the impression has gained ground that the Lagash city-state practised a kind of theocratic communism. In Fara (ancient Shuruppak), however, where private houses were excavated, the tablets indicate that private ownership was the rule. Note, too, that the Enhegal tablet (Barton, *Publ. Babylonian Sect., Univ. Mus., Univ. of Pennsylvania*, IX, No. 2) seems to treat of the sale of land. Our reform-document, moreover, speaks even of the poor as owners of fields, houses, donkeys, and fisheries. [24] Cf. supra, n. 5.

[25] Cf. T. Jacobsen: Primitive Democracy in Ancient Mesopotamia, *JNES*, 2, 1943, pp. 159-172, and

hereditary in the course of time.[26] Moreover, the more ambitious and successful of the *ishakku*'s naturally tended to augment their power and wealth at the expense of the temple, and this, as will soon become evident, led at times to a struggle for power between temple and palace.

Most of the inhabitants of Lagash were farmers and cattle breeders, boatmen and fishermen, merchants and craftsmen. Its economy was mixed, part socialistic and state-controlled, part capitalistic and free. In theory, the soil belonged to the city god, and therefore presumably to his temple which held it in trust for all the citizens. In actual practice, while the temple corporation owned a good deal of land which it rented out to some of the people as sharecroppers, much of the soil was the private property of the individual citizen; even the poor owned farms and gardens, houses and cattle. Moreover because of Lagash's hot, rainless climate, the supervision of the irrigation projects and water-works which were absolutely essential to the life and welfare of the entire community, necessarily had to be communally administered. But in many other respects the economy was relatively free and unhampered. Riches and poverty, success and failure were, at least to some extent, the result of private enterprise and individual drive. The more industrious of the artisans and craftsmen sold their hand-made products in the free town market. Travelling merchants carried on a thriving trade with the surrounding states by land and sea, and it is not unlikely that some of these merchants were private individuals rather than temple representatives. The citizens of Lagash were conscious of their civil rights, and wary of any government action which tended to abridge their economic and personal freedom, which they cherished as a heritage essential to their way of life. It was this 'freedom' which the Lagash citizens had lost, according to our ancient reform document, in the days before Urukagina's reign, and which was restored by him when he came to power.

Of the events which led to the lawless and oppressive state of affairs, there is not a hint in the document. But we may well surmise that it was the direct

S. N. Kramer: Gilgamesh and Agga, *Amer. Journ. Archaeol.*, 53, 1949, pp. 1-18, where it is shown that in very early Sumerian days the city-states had an assembly of elders as well as one of the arms-bearing males. No trace of these assemblies is found in the available Lagash material which dates from a considerably later period in Sumerian history. In addition to freemen, there were of course also many slaves among the inhabitants of Sumer. But there is no trace in the available material from Lagash of the existence of the *mushkênu*, a social category intermediate between freemen and slaves.

[26] Cf. e.g. the first five rulers following Ur-Nanshe.

result of the political and economic forces unloosed by the drive for power which characterized the ruling dynasty founded by Ur-Nanshe about 2500 B.C. Smitten with grandiose ambitions for themselves and their state, some of these rulers resorted to 'imperialistic' wars and bloody conquests. In a few cases they met with considerable success, and for a brief period one of them actually extended the sway of Lagash over Babylonia as a whole, and even over several of the neighbouring states.[27] The earlier victories proved ephemeral, however, and in less than a century Lagash was reduced to its earlier boundaries and former status. By the time Urukagina came to power, Lagash had been so weakened that it was easy prey for its unrelenting enemy to the north, the city-state of Umma.

It was in the course of these cruel wars and their tragic aftermath that the citizens of Lagash found themselves deprived of their political and economic freedom. For in order to raise armies and supply them with arms and equipment, the rulers found it necessary to infringe on the personal rights of the individual citizen, to tax his wealth and property to the limit, and to appropriate property belonging to the temple as well. Under the impact of war, they met with little opposition. And once power was in its hands, the palace coterie showed itself most unwilling to relinquish the domestic controls, even in times of peace. For these had proved highly profitable; indeed our ancient bureaucrats had devised a variety of sources of revenue and income, taxes and imposts, which in some ways might well be the envy of their modern counterparts.

But let the hoary Sumerian historian who lived in Lagash some 4500 years ago, and was therefore a contemporary of the events, tell the story more or less in his own words (Pl. 14):[28] The inspector of the boatmen seized the boats. The cattle inspector seized the large cattle, seized the small cattle. The fisheries inspector seized the fisheries.[29] When a citizen of Lagash brought a

[27] For Eannatum and his military successes, cf. supra, p. 222.

[28] The text of the reform document is inscribed in practically identical versions on two cones (B and C), cf. *SAK*, p. 46 ff. A variant of the same document is found on a fragmentary cone (A), cf. *SAK*, p. 44. A more widely divergent version of the text has been found inscribed on a partially preserved oval plaque which also contains a part of Entemena's historical document treated above; this plaque is attributed to Urukagina although his name is not found in the available text. Apart from *SAK*, translations of the document will be found e.g. in Barton: *The Royal Inscriptions of Sumer and Akkad*, p. 74 ff. and Deimel, *Orientalia*, 2, p. 3 ff. By far the most trustworthy translation is in A. Poebel's still unpublished *Sumerische Lesestücke*.

[29] Cf. particularly Kegel B and C (*SAK*, p. 46 ff.) iii 5 ff. and Ovale Platte (*SAK*, p. 54 ff.) i 13 ff.

wool-bearing sheep to the palace for shearing, he had to pay five shekels if the wool was white.[30] If a man divorced his wife, the *ishakku* got five shekels, and his vizier got one shekel. If a perfumer made an oil-preparation, the *ishakku* got five shekels, the vizier got one shekel, and the palace-steward got another shekel. As for the temple and its property, the *ishakku* took it over as his own. To quote our ancient narrator: 'The oxen of the gods ploughed the *ishakku*'s onion-patches; the onion and cucumber patches of the *ishakku* were located in the god's best fields.' In addition, the more important temple officials, particularly the *sanga*'s, were deprived of many of their donkeys and oxen, as well as of much of their grain.[31]

Even death brought no relief from levies and taxes. When a dead man was brought to the cemetery for burial, quite a number of officials[32] and parasites made it their business to be on hand to relieve the bereaved family of quantities of barley, bread and date-wine, and various furnishings. From one end of the state to the other, our venerable reporter observes bitterly, 'there were the tax-collectors.'[33] No wonder then, that the palace waxed fat and prosperous. Its lands and properties formed one vast, continuous and unbroken estate. In the literal words of our Sumerian commentator, 'The houses of the *ishakku* and the fields of the *ishakku*, the houses of the palace harem and the fields of the palace harem, the houses of the palace nursery and the fields of the palace nursery crowded each other side to side.'[34]

At this low point in the political and social affairs of Lagash, our Sumerian chronicler tells us, a new and god-fearing ruler came to the fore, Urukagina by name, who restored justice and freedom to the long-suffering citizens.[35] He removed the inspector of the boatmen from the boats. He removed the cattle inspector from the cattle, large and small. He removed the fisheries inspector from the fisheries. He removed the collector of the silver which had to be paid for the shearing of the white sheep.[36] When a man divorced his

[30] Cf. Ovale Platte ii 15 ff. [31] Cf. Kegel B and C iv 9 ff. [32] The nature of the duties of these officials, who were probably attached to the palace in some way, is uncertain.

[33] Literally 'From the boundary of Ningirsu (the northern boundary of Lagash) to the sea, there was the *mashkim-dí*', Kegel B and C vii 12 ff. The duties of this official are uncertain, but one of the more important of them certainly pertained to the collection of revenue.

[34] Cf. Kegel B and C vii 5 ff.

[35] Or in the literal words of the text: 'When Ningirsu, Enlil's foremost warrior, had taken Urukagina by the hand from the midst of 36,000 people, and given him the kingship of Lagash, he held to the words which his king Ningirsu had given him, (and) instituted the (divine) decrees of former days' (Kegel B and C vii 29 ff.). [36] Cf. Kegel B and C viii 14 ff.

wife, neither the *ishakku* nor his vizier got anything. When a perfumer made an oil-preparation, neither the *ishakku* nor the vizier nor the palace-steward got anything.[37] When a dead man was brought to the cemetery for burial the officials received considerably less of the dead man's goods than formerly, in some cases a good deal less than half.[38] Temple property was now highly respected. From one end of the land to the other, our on-the-spot reporter observes, 'there was no tax-collector.'[39] He, Urukagina, 'established the freedom' of the citizens of Lagash.[40]

But removing the ubiquitous revenue collectors and the parasitic officials was not Urukagina's only achievement. He also put a stop to the injustice and exploitation suffered by the poor at the hands of the rich. For example, supposing 'the house of a lowly man was next to the house of a 'big man', and the 'big man' said to him, 'I want to buy it from you'. If when he (the 'big man') was about to buy it from him, the lowly man said, 'pay me as much as I think fair,' and then he (the 'big man') does not buy it, that 'big man' must not 'take it out' on the lowly man.'[41] Urukagina also cleared the city of usurers, thieves and murderers. If, for instance, 'a poor man's son laid out a fishing pond, no one would now steal its fish.'[42] No wealthy official dared trespass in the garden of a 'poor man's mother', to pluck the trees, and carry off their fruit, as had been their wont.[43] As for the widow and the orphan, Urukagina made a special covenant with Ningirsu, the god of Lagash, that he would not permit them to be victimized by the 'men of power'.[44]

How helpful and effective were these reforms in the struggle for power between Lagash and Umma? Unfortunately, they failed to bring about the expected strength and victory, and in spite of our ancient historian's enthusiastic eulogies, Urukagina and his reforms were soon 'gone with the wind'. Like many another reformer, he seemed to have come too late with too little. In any case his reign lasted less than ten years, he and his city were soon over-

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[37] Cf. Ovale Platte iii 1-4, and the immediately preceding part of the lacuna between columns ii and iii which is to be restored in accordance with ii 15 ff.

[38] Cf. Kegel B and C ix 26. Note, however, that in case of a burial in the Enki cemetery, a number of additional levies were called for, but these all went to temple, not palace, personnel.

[39] Cf. Kegel B and C ix 22 ff. [40] Cf. Kegel B and C xi 13 ff. [41] Cf. Kegel B and C xi 32 ff.

[42] Cf. Ovale Platte iii 6 ff.

[43] Cf. Kegel B and C xi 17 ff. and Kegel A v ff. Just what kind of official the *sanga-GAR* was is uncertain; in spite of the component *sanga*, it seems hardly likely that he belongs to the temple personnel. [44] Cf. Kegel B and C xii 23 ff.

whelmed by Lugalzaggisi, the ambitious ruler of nearby Umma[45] who succeeded at least for a very brief period[46] in making himself king of all Babylonia.

[45] The sack of Lagash is described in an inscription on a clay tablet which provides a revealing glimpse of one aspect of the Sumerian philosophy of life. After listing some twenty temples and other public buildings which had been attacked, burned and plundered by the Ummaites, the author, possibly the very individual who wrote the reform document, concludes with the consoling thought that the Ummaites, in destroying Lagash, had committed a sin against Lagash's tutelary deity Ningirsu who sooner or later will make them pay for their misdeed. It is not Urukagina's sin, the author asserts toward the end of his inscription, but that of Lugalzaggisi, and therefore 'may his (Lugalzaggisi's) (personal) deity (the goddess) Nidaba, bear the responsibility for that sin.' In brief, our author had such firm faith in Urukagina's blamelessness in the struggle with Lugalzaggisi, and so sure was he of his theological premises, that he did not hesitate to point an accusing finger at a deity such as Nidaba, who, though not one of the leading deities of the Sumerian pantheon, played quite an important role in it as the goddess of writing and wisdom.

[46] In connection with Sumerian historiography, mention should be made of the Sumerian 'king list,' a document purporting to list in the form of successive dynasties the names of all kings who had ever ruled over Babylonia, from the very beginning of kingship to the days of the document's compilation, together with their regnal years. Our available copies of the compendium which seems to have been used as a 'text book' in the scribal schools, practically all date from the early post-Sumerian period, that is, the period following the Third Dynasty of Ur. The reasons for its original compilation, which may date to the days preceding Ur III, are of course unknown; the first compiler was no doubt motivated, at least in part, by a genuine historical drive to ascertain and record in the form of a summary the dynastic background of his country's past. A careful, thorough, and highly detailed study of the document was published by T. Jacobsen. *Assyriol.Stud.*, 11, 1939 (cf. also Kraus, *Zeitschr. f. Assyriol.*, 50, 1952, p. 29 ff. and Kramer, *op. cit.*, supra, n. 16, p. 162, n. 14), and the interested reader will find there a fully documented treatment of its dates, sources, methods, and historical value.

Two Jewish-Greek Inscriptions Recently Discovered at Caesarea*

M. SCHWABE

Hebrew University, Jerusalem

II.

THE inscription is on a fragment of a white marble tablet, of which only the upper left-hand corner is preserved, the bottom and right-hand parts are missing. The fragment is 8 cm. in height, 16 cm. in length and 3 cm. in thickness. It is part of the collection of the Hannah Szenes Museum at Caesarea, where it is listed as No. 7/p. Remains of the first two lines, and possibly a vestige of one letter in the third line, are preserved as follows:

MNHMA·I·AK
KNABAN
'I'

The first word is written almost entirely in ligature, except for the final A. The letters M N H M are so written that the last vertical stroke of the M serves as the first stroke of the N, and the last vertical stroke of the N serves as the first stroke of the H while the last stroke of the H similarly serves as the first stroke of the second M. I can think of no other example of such a ligature from Caesarea. The remaining letters are written without ligature. It is interesting to note the two dots on the I, signifying that it is a separately pronounced vowel-sound. The remains permit of the following attempt at completion:

μνῆμα 'Ιακ[ὼβ καὶ n. p. τ-]
έ]κνα Βαν [– – – – – – – – –]

The inscription does not begin in the same way as the first one, but uses the word μνῆμα, 'memorial stone', for grave. In this it resembles another Jewish inscription from Caesarea, which runs:

μνῆμα Λήα(ς)/[τῆ]ς θυγατρὸ(ς)/[Βεν]ιαμίν

'Memorial stone of Leah daughter of Benjamin'.[21] The word μνῆμα is common

* Concluded from *Israel Exploration Journal*, 3, 1953, pp. 127-130, and Plate 6 B, *ibid.*

[21] Cf. S. Klein, ed.: *Sefer ha-Yišûv*, I. Jerusalem, 1939, p. 150, No. 67.

in Jewish inscriptions, especially in Jaffa, where at least five examples may be found,[22] without taking into account those inscriptions in which μνήμη is used instead. It is impossible to guess the form in which the name Jacob appeared in this inscription.[23] A form like 'Ιακῖμος might have been used here, but in view of the relative frequency of the name Jacob among the Jews of Caesarea it is likely that here too the name was written in the form commonly used by the Jews of Palestine in the Talmudic period. The remnant ΚΝΑ fixes with certainty the form of our fragmentary document. At least two names of children were mentioned in it. The Τ of τέ]κνα was certainly written in line 1, for an inspection of the photograph (Plate 6 B) shows that there was no room for more than one Ε. It may be assumed that the two names were written in the genitive case, although τέκνα is given in the nominative, as was the practice in Jewish inscriptions at Caesarea. This should be compared with the inscription — also from Caesarea[24] —: 'Αντωνίνου καὶ Κύρου, τέκνα Σαμουήλου שלום, in which the same relation between the cases exists. The size of the fragment does not permit us to assume that it contained more than the names of the two children. Only one syllable remains of the father's name, which comes after τέ]κνα, and this of course limits us in our attempt to read the name. The historian Josephus, after having associated himself successively with the three Jewish sects of his time, turns to a fanatical teacher who leads an ascetic life in the desert; his name is Βάννους, Bannus. The name appears only in Josephus and in 1 Esdras ix, 35.[25] Βαννος or Βανος is found in Egypt especially in the fifth century A. D. and appears once in the fourth. We also find Βανης. Littmann in Preisigke's *Namenbuch* cites the name as the equivalent of 'Bani' (בני) in the list of Arabic names. In inscriptions from Syria we find Βανιος.[26] It is very common as a Jewish name, for it appears in various forms both in the Biblical literature

[22] *Loc. cit.*, Jaffa, Nos. 24, 27, 32 (the word has been completed here), 40, 50, 56. Apart from these cases, the form μνήμη appears twice: *loc. cit.*, Nos. 34, 44.

[23] On the various possibilities cf. supra, p. 128, and notes 6 and 14, *ibid.*

[24] Cf. *Sefer ha-Yišûv*, I, p. 150, No. 66. Cf. also the remains of the inscription, *loc. cit.*, No. 71. In No. 67 the apposition is given in accordance with normal syntax.

[25] Josephus *Life*, para. 11. In part of the MSS it is written with one Ν: πυθόμενός τινα Βάνουν ὄνομα κτλ. It is possible to consider both *Banus* and *Banun* in the nominative, especially in Hebrew.

[26] Cf. e. g. J. J. E. Hondius, ed.: *Supplementum Epigraphicum Graecum*. Leyden, 1934, VII, 1058, 1211, and: *Syria. Publications of the Princeton Archaeological Expedition to Syria in 1904-5*. Leyden, 1921, Nos. 741, 744. — H. Wuthnow: *Die semitischen Menschennamen in griechischen Inschriften und Papyri des Vorderen Orients*. Leipzig, 1930, p. 34, gives for Βάνιος the semitic root בנה.

and in the Apocryphal and Pseudepigraphical books; see, for example, Βαναί = בניהו in 2 Samuel viii, 18 (Βαναγαιας appears in MSS A and D). The form Βαναΐας or Βαναιάς is found in Greek, instead of בניהו in 1 Chron. ii, 25; instead of בנוי in 2 Esdras viii, 33 (MS A); instead of בָּנִי in 2 Esdras xviii (Nehemiah viii), 7; instead of בניה in 1 Chron. iv, 36; instead of בניהו in 1 Kings ii, 46. For Βαναΐας instead of בני see 2 Esdras xviii (Neh. viii), 7 and instead of בָּנָיָה 2 Samuel xx, 23 etc. Βαναιού instead of בינוי may be found in 2 Esdras xx, 9 (Neh. x, 10), and instead of בינוי we find Βανεί or Βανί 2 Esdras iii (Neh. xiii), 42. Βαναιά for בניהו occurs in 1 Chron. xv, 18. In the Apocrypha we find the forms Βαννούς, Βάννας, Βανναιοῦς, Βανιού, Βανναΐας. The name appears in various forms in the time of the Tannaim and Amoraim, as בנאה, for example, in Berakhot 55 b. בנאה or בנייה in Baba Bathra 58 a, is the master of a school at Tiberias (T. Jer. Sabb. 13 c-60) and belongs to the first generation of the Amoraim (220-250 A. D.). Compare the name בניי in T. Jer. Sanhedrin 21 d. In Cyprus a little *gemma* has been found with לבניהו בן חר inscribed on it.[27]

This long list of names proves that it is impossible to complete the father's name, of which only one syllable has survived. At all events, it was one of the numerous names formed with the root בנה. Possibly there was something else written immediately after the name of the father, such as a title or a mark of his profession.

Of the third line only the remains of one letter, Ψ, are preserved. The upper parts of the left and of the middle strokes are clearly visible and something also remained of the right stroke before the sharp lower edge of the inscription was broken off. The inscription contained three lines at least. The length of each line was so arranged that after the eight letters preserved in line 1 we should have found room for at least the end of the name Ἰακ[ώ[28] either in this or another form, Ἰακ[ώβ or Ἰακ[ώβου, followed by καί or κέ and in addition the name of the second son of Benaiah and the Τ of τ/έ]κνα — in other words at least nine letters, if we assign to the lost second name a minimum of five letters. If this assumption is correct, the remnant of the Ψ appears roughly in the middle of the line. From this we may infer that the Ψ is a remnant of the blessing for the dead, εὐ]ψ[ύχει, which also appears in Jewish inscriptions instead of the θάρσει so commonly found in the inscriptions of

[27] See J.-B. Frey: *Corpus Inscriptionum Judaicarum*, II. Rome, 1952, No. 737.

[28] Cf. *supra*, p. 128.

Beth Shearim, for instance. If this is so, the blessing was at the end of the inscription. Though εὐψύχει has no parallel, as far as I know, in the inscriptions of Jewish Caesarea or in the Jewish inscriptions of Palestine as a whole, this blessing is found twice in the inscriptions of Rome.[29] However, the completion is far from certain: there is no sufficient evidence to enable us to determine the length of the lines. The name of Benaiah's second son was apparently short, if we assume that the Ψ of εὐψύχει came approximately in the middle of the line. The word τ/έ]κνα is certain.

Inscriptions of this kind, in which no attention is paid to syntax, are frequent in Palestine, especially among the Jews. There is a similar inscription from Maiumas near Caesarea, Ἀντωνίνου καὶ Κύρου, τέκνα Σαμουήλου[30] in which the apposition is given in the nominative after names in the genitive. The same may be seen in the Jaffa inscription, Λαζάρου καὶ Σηλαπτίωνο(ς), τέκ(ν)α Σύμωνος.[31] From the Diaspora we may mention a Jewish inscription from Corycus in Cilicia: σωματοθήκη Ἀναστασίου καὶ Ἰακώ-(βου) καλιγαρίων, υἱοὶ Διογένου τοῦ μακαρίου.[32]

[29] Frey, *op. cit.* (supra, n. 27), I, Nos. 110 and 303. In 110 εὐψύχι comes at the end of the tomb inscription, but there the phrase 'He shall lie with the just' is added. In 303 at the end of the inscription a second blessing εὐφρόνι has been added by a second engraver in smaller lettering. For both inscriptions see the remarks of N. Müller: *Die jüdische Katakombe am Monteverde zu Rom.* Leipzig, 1912, p. 98 ff. Even though the evidence for such acclamation is very common in general Christian inscriptions, its content is not in discord with Jewish thought. The verb εὐψυχεῖν occurs in Josephus: *Antiquities*, XI, 241 (in the sense θαρρεῖν), in the New Testament in the Epistle to the Philippians ii, 19. The blessing is especially common in Egyptian papyri and inscriptions. Cf. e. g. L. Robert: *Collection Froehner, I. Inscriptions grecques.* Paris, 1936, No. 78, and in the volumes of F. Preisigke: *Sammelbuch griechischer Urkunden aus Aegypten.* Berlin & Leipzig, 1913 ff. Cf. for example Vol. III, 6238, where the word precedes and succeeds the name of the deceased. *Loc. cit.*, 7016, where Bilabel gives at the end of the inscription εὐψύχι Ἀθανασίου, δὶς ἀθάνατος which must be corrected to εὐψύχι, Ἀθανάσι, οὐδὶς ἀθάνατος. This example shows that the blessing signifies θάρσει. 7015 should also be corrected and completed οὐδ[ὶς] ἀθάνατος. Here εὐψύχει comes at the beginning of the inscription. Bilabel presents line 4 in the following form: .ου... He remarks that after ου Λ or Α follows. There is certainly a remnant of Δ. In order to determine the meaning of εὐψύχει it will be useful to consider one of the numerous Jewish inscriptions of Corycus in Cilicia. Cf. J. Keil & A. Wilhelm: *Monumenta Asiae Minoris Antiqua*, III. Manchester, 1931, No. 262, 5, where it has been completed with some certainty μὴ ἀθυ]μῆτε, οὐδὶς γὰρ ἀθάνατος. We have before us a paraphrase of θάρσει. The word is, however, found once in Palestinian epigraphy at the end of a tombstone from Gerasa, cf. C. B. Welles in C. H. Kraeling, ed.: *Gerasa: City of the Decapolis.* New Haven, 1938, p. 455, No. 230, and Plate CXVII b.

[30] Cf. *Supplementum Epigraphicum Graecum*, (supra, n. 26), VIII, 135; *Sefer ha-Yišûv* (supra, n. 21), I, p. 150, No. 66. It is mentioned here as found in the surroundings of Caesarea.

[31] Frey, *op. cit.* (supra, n. 27), II, 935. *Sefer ha-Yišûv* (supra, n. 21), I, p. 86, No. 52.

[32] W. H. Buckler, W. M. Calder, W. K. C. Guthrie: *Monumenta Asiae Minoris Antiqua*, III. Manchester,

There exists still another fragment of an inscribed tablet from Caesarea—No. 179/P in the Hannah Szenes Museum (Pl. 15 B). This tablet belongs to the group of Jewish tomb-inscriptions discussed above (p. 128). The upper left-hand corner and remains of the first and second lines are preserved; the fragment is 8 cm. in length, 6 cm. in height and 2 cm. in thickness, and the letters are 2 cm. high. The legible part consists of

ΜΕΜΟ

Κ′.

which, on the basis of the material brought here, may be completed as follows:

μεμό[ριον n.p. καὶ n.p. τ]

έ]κν[α n.p. ——————]

It is possible that this inscription like the former consisted of three lines. Unfortunately, the tablet is broken in such a way that nothing remains of any name. The letters have the form of the oval Byzantine alphabet.[33] The O and the E fit the alphabet of that period, but the M with its somewhat outward-turning curves does not appear in Welles' tables, but is common at an earlier period.[34]

It is not possible to draw any final conclusions, but I am inclined to put the date in the fifth or even the sixth century. There can be no doubt that the fragment is of Jewish origin.

As regards the former inscription, it contains few characteristic letters which might enable us to date it. The large number of ligatures in line 1 is not a chronological indication. However, the Byzantine A with its vertical stroke reaching the base of the line at the end of the internal acute angle[35] points to the fifth or sixth century. The position of the horizontal line inside the H above the centre of the two vertical strokes seems to be commoner in the fifth and sixth centuries than in the second and third. This inscription too belongs to the Byzantine period.

The two inscriptions, therefore, with the small fragment of a third Jewish inscription, point to the existence of a Greek-speaking Jewish community at

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1933, No. 237. The editors Keil and Wilhelm stress the strong tendency to be felt in many inscriptions from Corycus to add an apposition in the nominative for all sorts of cases, and they refer to Rademacher's remarks on this in his New Testament grammar, p. 107 (2nd ed.).

[33] Cf. Welles, *op. cit.* (supra, n. 29), p. 367.

[34] Cf. Welles, *op. cit.* (supra, n. 29), p. 363, Fig. 12, inscriptions 122, 194 from 2nd-3rd centuries. The M appearing there (p. 366, Fig. 14, Byzantine period, square alphabet) in Nos. 285/286 is different from the one in our inscription, as the internal strokes do not start from the beginning of the external strokes.

[35] Cf. Welles, *op. cit.* (supra, n. 29), p. 367, Fig. 16, No. 306, from the sixth century.

least from the end of the fourth till the end of the sixth century. All four names preserved in them are originally theophoric, even Biblical, Jewish names, much modified however in form, to meet the needs of the Greek spoken at Caesarea. A. Wegman of S'dôt Yam (Caesarea) informs me that the two inscriptions and the fragment were found to the west of the Hippodrome.[36] This, however, is insufficient ground for assuming that in the early centuries of the Byzantine era a Jewish cemetery existed between the Hippodrome and the sea. The city walls, which are clearly visible in an air photograph in the form of a semi-circle,[37] existed until after the conquest of the city by the Arabs. It is clear that a cemetery could not have existed within the city walls in the southern part of Herodian Caesarea. But one may assume that in the Talmudic era many Jews lived in the southern town outside the walls, buried today under the sand dunes; its ἄμφοδα may be clearly recognized.[38] It seems probable that these stones belonged to tombs built along the main road which ran from east to west and led into the town, passing the west gate of Herod's wall which was surely not far from the Hippodrome but a little way to the north, and that the road was, like the Appian Way, a road of tombs.[39] But even in this case, it is impossible to explain the occurrence of these inscriptions on the site of their discovery. Many of the fragments of inscribed tablets found in this area must have been re-used in later buildings there. No conclusions about the site of the Jewish cemetery should therefore be drawn from their location and one must patiently await the time when extensive excavations in the city and surrounding area will throw light upon what we have long wanted to know.

[36] Cf. the air photograph in A. Reifenberg: Caesarea: A Study in the Decline of a Town, *IEJ*, 1, 1950-51, Plates VIII-IX.

[37] Cf. Reifenberg, *op. cit.* (supra, n. 36), Plates VIII-IX.

[38] Cf. Reifenberg, *op. cit.* (supra, n. 36), Plate VIII.

[39] The excavations carried out in Caesarea in 1951 north of the Byzantine court, in which the huge statues were found, shows that the road which led from Sebaste to Caesarea cut Herod's wall somewhat to the north of the modern road leading from the main road to the village of S'dôt Yam.

Some Unpublished Coins of King Herod

A. KINDLER

I. (Cf. Plate 15A, No. 1)

Metal: AE; size: 12 mm.; weight: 0.5 grm.; axis: ↙.

Obverse: Tripod with curved legs; border of dots. Legend: Beginning above (here to be seen only fragmentarily to the left and above the tripod): BA.....Δ.C; to be completed: BA[CIΛEYC HPΩ]Δ[H]C.[1]

Reverse: Palm-branch with leaf-like ornamentations in the field;[2] border of dots. No legend.

The tripod series, hitherto known in two denominations[3] only, has hereby been enlarged by a third type of a yet smaller denomination.

II. (Cf. Plate 15A, No. 2)

Metal: AE; size: 14 mm.; weight: 1.5 grm.; axis: ←.

Obverse: Legend in three lines:

=BAC [I]ΛE[YΣ] H[PΩΔH]Σ.

No border of dots.

Reverse: Tripod with curved legs; border of dots. No legend.

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[1] The nominative case is used, as the partially preserved legend shows: BA[CIΛEYC HPΩ]Δ-[H]C. This is indicated by the last letter (C) of the name, which allows only the reading HPΩ-ΔHC and not the generally used genitive case HPΩΔOY. On the coins of Herod the nominative case is found frequently *only* on *one* type (cf. infra, n. 4).

[2] As the Hasmonaeans had already used the palm-branch on their smallest denominations (John Hyrcanus: Hill, G. F.: *Catalogue of the Greek Coins of Palestine.* The British Museum, London, 1914, pp. 195-196, Nos. 48-56; Reifenberg, A.: *Ancient Jewish Coins.* Jerusalem, 1940, p. 28, No. 12; and Alexander Jannai: Hill, *op. cit.*, p. 199, Nos. 9-10; Reifenberg, *op. cit.*, p. 29, No. 17), it might have been the mark for this denomination at the time of Herod too.

[3] (a) The larger denomination: *Obverse:* Wreath or fillet tied (or not tied) at the bottom; containing (or not) the sign: ×, legend around: BACIΛEΫC HPΫΔOY. *Reverse:* The tripod with palm-branches on either side. Cf. Hill, *op. cit.*, pp. 222-224, Nos. 20-39, and Reifenberg, *op. cit.*, p. 30, Nos. 30-31.

(b) The smaller denomination: Similar to the above, but on the reverse without palm-branches on either side of the tripod. Reifenberg, *op. cit.* (supra, n. 2), p. 30, No. 32.

III. (Cf. Plate 15A, No. 3)

Metal: AE; size: 13 mm.; weight: 1.5 grm.

Obverse: Legend written in a circle:
Nominative case as usual on this type.
=BACI[ΛEYC] HPΩΔ[HC]; border of dots.
Reverse: Anchor with one crossbar and ring above. No legend.

The coin described here is certainly only a variety of the usual 'Legend/Anchor' type,[4] from which it differs in the following respects:

(a) the legend is placed in a circle and not in lines,

(b) the anchor has in addition to the crossbar a ring at the upper end,[5] while the 'circle with attached ornaments' around the anchor, as described by Hill,[6] is obviously missing on our specimen.

IV. (Cf. Plate 15A, No. 4)

Metal: AE; size: 16 mm.; weight: 1.5 grm.; axis: →.

Obverse: Anchor; border of dots.
Legend: Letters of the name — without the title of king — scattered in an unusual manner around the anchor: H b Ω =HPΩ[ΔOY?].
Reverse: Double cornucopiae with a caduceus between the horns; border of dots.

Legend: Letters of the name scattered around the double cornucopiae:
H ϙ ∇ ⊥ Φ
(= H P ω Δ φ (ι))

Unusual are the scattered letters of the name of Herod *without* the title 'King' on the obverse. The existence of a second legend on the reverse is very strange, not only in respect of this type but also in respect of all other types of coins

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[4] Hill, *op. cit.* (supra, n. 2), p. 226, Nos. 66-69; Reifenberg, *op. cit.* (supra, n. 2), p. 31, No. 35.

[5] The ring is not to be recognized on the picture (cf. Plate 15 A, No. 3) because of the poor preservation of this part of the coin. The author possesses 13 specimens of this type, on none of which has the anchor a ring. The same applies to the coins of this type which the author was able to check in various other collections. The ring on the anchor to be seen on the woodcut given by F. W. Madden: *Coins of the Jews.* London, 1881, p. 113, No. 21, is doubtful, nor does the 'wreath' represented there around the anchor correspond to reality, for it should have been a circle with attached ornaments.

[6] Hill, Reifenberg, *op. cit.* (supra, n. 4).

issued by Herod, which were actually inscribed *only* on the obverses, while the reverses remained without a legend.[7]

The Φ might stand for Φ(ίλος τοῦ Καίσαρος).[8]

All the coins published are from the author's collection.

[7] The only exception to this are those specimens of this type which bear the single letter N above the double cornucopiae. Until now only M. Narkiss: Notes on the Coins of the Herodian Dynasty, *BJPES*, 1, 4, 1934, pp. 8-14, Ref. p. 11, n. 13, has tried to explain this letter, suggesting that it is the second letter of the name ANTONIVS, the first protector of Herod. The author, on the other hand, suggests that it might be the initial of Nicolaus of Damascus, the historian and philosopher, who was the personal counsellor (Josephus, *Ant.* xvii, 5, 4) and loyal friend of Herod. (See also E. Schürer: *Geschichte des jüdischen Volkes im Zeitalter Jesu Christi*, I. Leipzig, 1901, pp. 50-51, 394 and 396.) Herod also assigned him special missions (Josephus, *Ant.* xvi, 9, 4), and may have honoured him by putting his initial on a coin. It may also be that Nicolaus of Damascus served for a time as financial counsellor, or magistrate of the royal mint, in virtue of which the letter N was placed on the coins.

[8] Cf. Josephus, *Ant.* xiv, 10,2 and the ΦΙΛΟΚΑΙCΑΡ on coins of Agrippa I (Reifenberg, *op. cit.*, supra, n. 2, pp. 33-34, Nos. 60, 62, 63) and of Agrippa II (*ibid.*, p. 36, No. 74); also ΦΙΛΟΚΛΑΥΔΙΟC on coins of Herod of Chalcis (*ibid.*, p. 34, Nos. 68, 69).

On a New Subfossil Liptobiolite from the Plain of Sharon in Israel

J. PACLT

Bratislava*

During his investigation in Palestine in the years 1926-1929, J. Petrbok of the National Museum, Prague, found a sample of 'fossil resin' in Kurkar rocks near Tel Aviv-Jaffa (Petrbok, 1929, p. 258). The material was deposited in the collections of the Department of Geology, National Museum, Prague, under the accession number 23.856. I am indebted to the Director of the National Museum and the Keeper of the Department respectively for lending me the specimen for examination.

The sample, which is approximately 63 by 43 by 10 mm. in size, appears reniform on both sides (see Plate 16 A,B). The surface is covered locally with grains of calcareous sand (Plate 16 A), while that shown in Plate 16 B presents an irregular but extensive powderiness due to minute encrusted particles of the same substance.

In sections of the resinous substance, tan ('cuir rouge') in colour (according to RC[1]) and greasy in lustre, a rubbery, semi-elastic consistence is to be observed. Density varies considerably, as in other non-homogeneous materials: from 0.946 to ca. 1.2 (here minor mineral impurities of the surface). Softening point ranges from about 150 to 170°C. When burnt, an agreeable odour may be noted, which much resembles that of burned Kauri copal. The substance is strongly hydrophobic and is only slightly discoloured by boiling water. It may be somewhat salty, especially on the surface and when treated with boiling water; otherwise it seems to be tasteless (not bitter!). It does not leave—even when heated—an oil-spot on fine paper.

The substance becomes luminescent when exposed to ultraviolet radiation.

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* This investigation was carried out in the Biological Laboratory of the Division of Chemistry, Forest Products Research Institute, Bratislava, Czechoslovakia.

1 RC = *Répertoire de couleurs*. Paris, 1905. All colours mentioned in the present paper are termed in accordance with RC.

Natural surfaces of the substance become verdigris ('aerugineo' of Saccardo), excluding the dark lemon-yellow regions which become sulphur-yellowish. When sections are excited by UV-rays, they show a lilacy white luminescence. The general luminescence of both sides of the sample will be shown in natural colours in a comparative study on the liptobiolites to be published elsewhere.

Colour reactions may be tabulated as follows:

Agent	*Coloration (seq. RC)*
Aniline	Reddish Apricot
Carbolfuchsin	Rosy Magenta
Picrinaniline Blue	Yellowish Apple Green
Malachite Green (alcoholic sol.)	Sky Blue Green

Although a large number of organic solvents was used, none was found to dissolve the substance. It swells up intensively in chloroform to a mucilage, with the partial formation of an emulsion which remains for many hours. It swells up considerably also in carbon disulphide, turpentine oil, trichloroethylene, kerosene, xylidine, benzene, toluene, xylene, and hot linseed oil, to form a gelatinous mass; less considerably in ethyl ether and petroleum ether to form a milk-white troubled lump. It swells up, but very slightly, in contact with acetone while glacial acetic acid and ethyl alcohol may discolour it only to a degree. Thus the action of the two latter agents may be compared with that of boiling water.

While the substance is with difficulty decomposed by hydrochloric acid it decomposes comparatively easily with sulphuric acid, like many natural resins such as Kauri copal or succinite. It contains gums; after hydrolysis with sulphuric acid it gives with Luff's solution the reaction for reducing sugars. A search for umbelliferone brought negative results. The investigation of the resinous components indicated clearly that the substance is a gum-resin of the resene-resins series, differing from all the known members of that group in its physical and chemical properties. A complete analysis was not possible since only a few grams of the substance could be used.

Accordingly, it appears worth while to give a name to this substance, which is a new species of liptobiolite. I propose to name it *Jaffaite* (after the locality). We may conclude that Jaffaite must be of relatively considerable age (Pleistocene?); it has still the power of absorbing a quantity of various organic solvents in which many recent members of the group are partially or totally soluble.

As to the botanical source of Jaffaite, the only family and genus which may be considered are *Anacardiaceae* and *Pistacia* respectively. The photomicrograph of Jaffaite (see Plate 16C) shows some plant remnants (trichomes, etc.) somewhat resembling mastix, the resinous exudation of *Pistacia lentiscus* spp. Among the family of *Anacardiaceae* only one genus or species is known which yields a gum-resin *(Schinus).* Thus, in principle, Jaffaite corresponds chemically to this type. Some anatomical affinity may therefore be suggested between *Schinus* and the plant which produced Jaffaite, a relation which is necessarily not to be noted and expressed in terms of taxonomy.

Four species of the genus *Pistacia* occur in the present flora of Israel. According to Zohary (1951, p.31), all except *P. saportae* play an important part in the vegetation of the country. One species, *P. atlantica,* may be excluded from our consideration for phytosociological reasons. Of the two (or three) remaining species, *P. lentiscus* is an omni-Mediterranean element occurring directly in Kurkar-sandstone hills, whereas *P. palaestina,* being a vicarious species of *P. terebinthus* in the East Mediterranean region, is only rarely found in the coastal plain. Indeed, Zohary (1951, p.34) mentions the latter species from the Plain of Sharon, the locality of Jaffaite. The third species, *P. saportae,* occurs locally within *P. palaestina* and is hitherto a less known plant which can scarcely be of importance for our conclusions.

The question whether Jaffaite is derived from *Pistacia palaestina* or whether it was produced by *P. lentiscus* remains open. Owing to the fact that a subspecies of *P. lentiscus* is known to yield mastix, the well-known resin (not gum-resin!), it seems to be probable that the past source of Jaffaite was *Pistacia palaestina* Boiss. rather than *P. lentiscus* L.

SUMMARY

A NEW species of liptobiolite is described and named Jaffaite. It was found in the Kurkar-sandstone hills near Tel Aviv-Jaffa. The investigation shows that:

1) Jaffaite is a gum-resin of the resene-resins series,

2) The botanical source of the new liptobiolite is a member of the genus *Pistacia (Anacardiaceae),* perhaps *P. palaestina* Boiss.

Jffaaite seems to be of considerable age, being produced, perhaps, by a plant of the Pleistocene.

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On the Water Balance of Lake Tiberias 1935/36 – 1946/47*

J. NEUMANN

Israel Meteorological Service

INTRODUCTION

THE purpose of this note is to draw attention to the fact that by combining existing hydrometric data for the Jordan's volume of inflow into Lake Tiberias with results of recent computations of runoff from the catchment area of the lake and evaporation from the lake itself, it is possible to arrive at an understanding of the principal features of the annual water balance of this lake. It will be seen that the amount of *computed* total outflow from the lake is close to the amount of outflow *measured* in the Jordan at Deganya Bridge.

Previously published work on this subject includes a paper by de Leeuw (1952), but at the time of its publication some of the results utilized in the present note were not availabie.

BASIC DATA, OBSERVED AND COMPUTED

AFFLUENT JORDAN. The hydrometric station nearest (upstream) to the point of inflow of the Jordan into Lake Tiberias is at the Bridge of the Daughters of Jacob, 15 km. upstream from the point of inflow. According to the Hydrological Service (1952, pp. 24-25), at this bridge in the period under examination, the Jordan discharged a volume of water of 560×10^6 m³/year.

PRECIPITATION OVER THE LAKE. According to an estimate by N. Rosenan on the basis of precipitation maps, in the hydrological years under review precipitation over the lake and its catchment was close to 'normal' (1901-30). For the lake this is estimated to be 40 cm/year (see precipitation map in *Climatological Normals,* 1952). With a lake area of 167 km², precipitation

* It is a pleasant duty to acknowledge the writer's debt to Mr. M. J. Goldschmidt, Director, Hydrological Service, and to Mr. N. Rosenan, Chief, Climatological Division, Meteorological Service, for some of the data used in this paper.— The hydrological year begins on the 1st of October.

is thus believed to have supplied the lake with 65×10^6 m³/year of water.[1]

TOTAL RUNOFF FROM THE CATCHMENT. It is estimated (Neumann, 1953 b), on the basis of an empirical regression equation relating annual precipitation and annual runoff from catchments, that some 23% of the annual precipitation of the catchment of Lake Tiberias between the Bridge of the Daughters of Jacob and Deganya Bridge reaches the lake. Rosenan estimates, as was mentioned above, that in the hydrological years 1935/36-1946/47 the mean annual precipitation was close to its 'normal' which is 58 cm. The regression equation thus gives a runoff of $58\times0.23 = 13.3$ cm. which for a catchment of an area of 1,038 km² (figure due to M. Goldschmidt) gives a runoff of 135×10^6 m³/year. Reasons have been adduced (Neumann, 1953 b) to indicate that the runoff thus estimated is total runoff, i. e. surface and subterranean runoff, or at least nearly total runoff.

To digress for a moment, the above total runoff estimate implies that some 465×10^6 m³/year, or nearly 45 cm/year of water evaporated from the soil surface and vegetation of the catchment. This would mean that 77% of the precipitation was used up for evapotranspiration.

EVAPORATION FROM THE LAKE. From the heat balance of the lake (Neumann, 1953 a), it has been found that mean annual evaporation from Lake Tiberias is 162 cm. With a lake surface area of 167 km², this would amount to 270×10^6 m³/year.

WATER USED FOR IRRIGATION. It is stated (de Leeuw, 1952) that the quantity of water taken from the lake for purposes of irrigation is negligible. Hence, this term will not appear in the balance sheet below.

CHANGES OF LAKE LEVEL. According to the *Hydrological Year-Books*,[2] on 1 October 1935 the lake surface was at an elevation of -211.05 m., whereas on 1 October 1947 the lake level was at -211.29 m. In 12 years, the lake level receded a net total of 24 cm. which is equivalent to a mean net annual drop of 2 cm. or a mean annual loss of volume of nearly 3.5×10^6 m³. As this loss is part of the total outflow and evaporation losses from the lake, it will not appear in the balance sheet as a seperate item.

BALANCE SHEET OF LAKE TIBERIAS

The above data are helpful in setting up a balance sheet for Lake Tiberias:

[1] In this paper, all figures of volume of water are rounded off to the nearest integral multiple of 5×10^6 m³.

[2] 1946/47, p. 228; 1947/48-1949/50, p. 559.

MEAN ANNUAL WATER BALANCE OF LAKE TIBERIAS, 1935/36—1946/47

in units of 10^6 m³

Gains		*Losses*	
Jordan inflow at the Bridge of the Daughters of Jacob	560	Evaporation	270
Precipitation over the lake	65	Balance (=computed total outflow)	490
Runoff from catchment between the Bridge of the Daughters of Jacob and Deganya Bridge	135		
	760		760

Thus for the period considered, the computed total outflow is 490×10^6 m³/year. During the same period, the outflow in the Jordan observed at Deganya Bridge, near the point of exit of the river from the lake, amounted to 480×10^6 m³/year (de Leeuw, 1952, p. 4). Hence if it may be assumed that underground losses of water from Lake Tiberias are small, it may be stated that the agreement between the computed and measured outflow amounts is close. Nominally, the agreement is within 2%.

DISCUSSION

The good result obtained above may appear to be somewhat fortuitous, since all terms of the balance sheet, both observed and computed, are subject to an error of several per cent. Moreover, it is not known whether the subterranean catchment of the lake corresponds to its surface catchment. It is possible that an unaccounted underground inflow or outflow ('ground-water piracy') below the area of the surface catchment, or a suitable combination of these flows, happens to be of a magnitude to conceal the effects of errors in some of the terms appearing in the balance sheet.

So far, the only reason against the assumption of existence of an unaccounted underground inflow or outflow of a significant amount is the fact that similar calculations (unpublished as yet) of the water balance of Lake Huleh result in a computed total outflow from the catchment area of the lake which agrees within 1% with the amount of outflow measured in the Jordan at the Bridge of the Daughters of Jacob. It would be too fortuitous for the two computations, using independent data, to result in figures for the outflow which are in good accord with the flow measured in the Jordan, and yet for the accord to be in both cases the result of unaccounted underground flows which happen to balance completely or almost completely the errors of the water-balance terms accounted for.

Finally, it is worth considering briefly the figure representing total runoff (computed) from the catchment of Lake Tiberias, which was found to be 135×10^6 m^3/year. According to M. Goldschmidt, the springs of the Lake Tiberias area discharge some 65×10^6 m^3/year. He estimates that storm-water inflow into the lake may amount to 10 to 20×10^6 m^3/year. Hence, these two sources are considered to account for some 80×10^6 m^3/year. Now, if total runoff from the catchment is 135×10^6 m^3/year, then some 50×10^6 m^3/year of this should reach the lake, either by way of storm-water inflow into the Jordan along its 15 km. stretch between the Bridge of the Daughters of Jacob and the point of inflow of the river into the lake, or by way of underground seepage into the lake, or in both ways. This is of course a crude estimate, but it would be hard to give a better one at the present juncture.

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The Pattern of Settlement in Palestine*

D. H. K. AMIRAN

Hebrew University, Jerusalem

THE GROWTH OF SETTLEMENT

A COMPARISON of the maps for 1875 and for 1952[54] shows the striking increase in settlements in Palestine. This increase did not affect the whole country evenly; most of it took place in the plains, which had been largely emptied of their population in the centuries of decline and presented an outstanding example of the under-development—or even mis-development—of an area well endowed by nature. The prospect of developing an efficient agriculture based on good soils and adequate water attracted Jewish pioneer settlers to the plains and led to spectacular developments in reclamation. Sections of the coastal plain and the Jordan Valley, the plains of Jezreel and Harod, the northern Sharon, the southernmost coastal plain and the Beth-Shan plain were settled one by one, while the reclamation of the Huleh Basin has just begun. As a result, the two maps show nearly opposite pictures: in 1875 the uplands were fairly densely settled, the lowlands empty. Today, settlement in the lowland plains is denser than or at least equal to that in the mountains.

Unlike the intensive development in the plains, settlement in the mountains was rather stagnant, especially in those parts where the population remained wholly Arab. These developments had a decisive influence on the delimitation of the present political boundary between Israel and Jordan.[55]

But the increase of density within the settled area and the gradual filling-in of empty spaces within it is only one major difference between the condition of settlement in Palestine a century ago and today.

THE SOUTHWARD EXPANSION OF THE SETTLED AREA

The second major difference is the expansion of the settled area, mainly towards the south. Not all of this development is breaking new ground. 'Settlement

* Concluded from *Israel Exploration Journal*, 3, 1953, pp. 65-78, 192-209.

[54] Cf. Figs. 3 and 4, supra, pp. 196-7.

[55] The dash-dot line in Fig. 4, p. 197, represents the border of the State of Israel.

habitually advances and retreats on the outer fringe of land occupation', as Bowman stressed in the preface to his classic study *The Pioneer Fringe*.[56] Viewed in historical perspective, present-day settlement in the frontier region is by no means an isolated phenomenon but merely one phase in an age-old oscillatory process. A comparison of the map for 1875 and that of ancient sites[57] clearly shows that occupation in the nineteenth century represents strong regression from lands previously occupied. Up to Byzantine times there existed in the northern part of the Beersheba Basin a considerable number of settlements south to the Gerar Valley and beyond. The conspicuous tells of Shari'a, Abu Hureira and Jemmeh on the banks of the Gerar Valley bear eloquent testimony to the size and importance of some of these sites in ancient times.

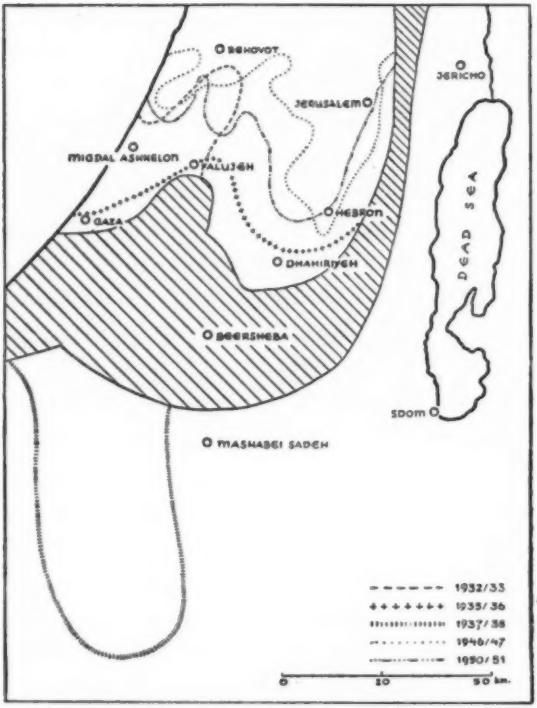
This southern border of the settled area of Palestine is the true 'Pioneer Fringe' of the country.[58] Activities along it are, therefore, indicative of conditions in the country as a whole and of the initiative of its population. The expansion of the pioneer fringe by sedentary agricultural settlement or its reversion to very precarious occupation by Beduin tribes reflects the change from thriving to adverse times. The degree of under-development during the latter may be gauged by the status of the Beduin: nomad or semi-nomad.

In common with other regions of classic pioneer settlement, the pioneer fringe in the Palestinian south is an area of marginal conditions near the border of aridity. Average annual rainfall figures are 398 mm. at Falujeh in the coastal plain and 390 mm. at Dhahiriyeh in the Hebron Mountains at the northern border of the area, and 227 mm. at Beersheba in the centre. Further south the rainfall decreases to 114 mm. at Mashabei Sadeh.[59] But the decrease in amount is less detrimental to settlement than the high annual variation normal at the

RAINFALL AT BEERSHEBA: DEVIATION OF ANNUAL AMOUNTS FROM AVERAGE

	Total	<10%	<20%	>25%	>33%	>50%
No. of years	18	6	8	9	4	1
%	100	33	44	50	22	6

[56] I. Bowman: *The Pioneer Fringe*. New York: Amer. Geogr. Soc., Spec. Publ. 13, 1931, p. V.
[57] Cf. Fig. 3, supra, p. 196, and Fig. 8, p. 206.
[58] It has been appraised as such by J. Gottmann: The Pioneer Fringe in Palestine: Settlement Possibilities South and East of the Holy Land, *Geogr. Review*, 27, 1937, pp. 550-565.
[59] *Climatological Normals*, I. Israel Meteorological Service, Ser. A, No. 3, 1952.



(Drawn by N. Z. Baer)

Fig. 10. The 250 mm. rainfall line between 1931-32 and 1952-53 runs in the ruled area, except in the years specially indicated. (Reproduced by permission of the Director of the Israel Meteorological Service.)

semi-arid border. Annual rainfall in the eighteen years ending 1952-53 varied at Beersheba between a maximum of 291 mm. (28% above average) and a minimum of 108 mm. (52% below average). In ten out of these years the deviation from average exceeded 20 per cent, all but two cases being negative deviations. Fig. 10 shows that the 250 mm. rainfall line passes through this area in most years. In 1937-38 only it bulged far to the south, whereas in at least three years it remained north of Migdal Ashkelon in the coastal plain, and crossed the mountains near Hebron.

A region in which rainfall so often deviates markedly from average conditions is not very well suited to settlement. Good years give good and sometimes excellent harvests, bad years produce very meagre yields and not infrequently the crops fail completely. Here as in other pioneer countries certain factors were inducements to settlement: a very sparse population and therefore under-development in the pioneer belt, the availability of land, the chance of good years and yields, fair quality of soils, the lure of an almost empty land to be developed and of free frontier life, population pressure and land shortage in the adjoining settled lands.

The villages on the fringe of the permanently occupied area in the coastal plain were as outstanding for their large population and acreage as their counterparts in the mountains (cf. supra, pp. 70-74). Falujeh (population in 1931:

3161, acreage 38,000 dunams) or Bureir (1894 inhabitants, 46,300 dunam) are suitable specimens.[60] The southern border of permanently inhabited villages was fairly stable for several centuries along a line running from Gaza through Bureir and Falujeh towards Beth Guvrin. Very feeble attempts to expand settlement in the coastal plain southwards are discernible since early in the last century.

Robinson passed this area in 1838. He visited the village of Huj 'recently founded by order of the government in the territory occupied by the Bedawîn.' He relates that two Beduin tribes, having revolted against the Egyptian occupation force in 1834, were defeated with heavy casualties, 'some were taken as soldiers, and the rest *ordered*[61] to become Fellâhîn'.[62] From Bureir Robinson proceeded east to Beth Guvrin via Qubeibeh 'another village built up by the governor of Gaza on former foundations' (*ibid.*, p. 394). Between Bureir and Qubeibeh he visited the village of es-Sukkarîyeh. 'Like Huj, it had recently been built up by the governor of Gaza, Sheikh Sa'id, upon former foundations' (*ibid.*, p. 393). Whereas the resettlement of Huj and Qubeibeh was a success, that of Sukkarîyeh was a failure. When visited during the *Survey of Western Palestine* in 1877 it was already 'a ruined village'.[63] As time passed, all trace of the village vanished and even its name was forgotten. The maps of Mandatory Palestine show at the place the tomb of a Sheikh Abu Ghazala (sheet 12, map reference 12921085). Only the 1:25,000-map surveyed by the British Army in 1945 shows 'Es Sukriya' again as a group of five buildings. This case is typical of frontier settlement, which always involves a certain number of 'stillbirths'.

Some five kilometres S and SE of Huj were situated the villages of Muharraqa and Kaufakha. They too were recent additions to the map. The *Map of Western Palestine*, surveyed in 1877, shows no trace of Muharraqa and records an ancient site at Khurbet el Kofkhah (sheet XX, *Mem.* III, p. 283). Braslawsky[64] cites oral tradition and documentary evidence to show that both villages were founded about 1880 and settled by people from Gaza. He draws attention to the straight

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[60] Cf. the map *Population, 1944* in: Maps of Palestine. Suppl. to Cmd. 6808, London, 1946, compiled by E. C. Willatts, reproduced and commented upon in his: Some Geographical Factors in the Palestine Problem, *Geogr. Journ.*, 108, 1946, pp. 146-179. — On Bureir cf. infra, n. 66.

[61] The italics are mine.

[62] E. Robinson: *Biblical Researches in Palestine, and in the Adjacent Regions. A Journal of Travels in the Year 1838*, II. London, 1841, pp. 384-5.

[63] *Mem.* III, p. 286.

[64] J. Braslawsky: *The Land of the Negev*. Merhavia, 1946. Ref. p. 359 (Hebrew).

layout of the roads in both villages, alien to the normal Arab village. The British 1:40,000-map from World War I shows the inhabited villages El Maharata (= Muharraqa) and Kh. el Kofkhah.[65] The two villages were apparently settled on the initiative of the Ottoman Government, as their lands were considered crown land, *Jiftlik*.[66]

Some 6 km. east of Huj on the road to Ruhama the small village of Jammameh was situated. The Survey of Western Palestine[67] described here in 1877 'remains of a ruined village, about 20 houses'. This seems to prove that a first attempt at settlement was made here already in the nineteenth century, probably at the time of the Egyptian occupation. Later-on the place was settled again and consisted like all the Arab villages in the southern coastal plain north to Masmiya of mud-brick houses, both an expression of Egyptian cultural influence and an adaptation to available building material. The 1:40,000-map of World War I[68] shows Kh. Jammameh again as a 'Ruined Village': it was deserted during World War I by its inhabitants to escape conscription. In the nineteen-thirties it was a village of some 300 inhabitants living in about fifty houses built in three separate quarters.[69]

In addition to this slight extension of settlement in the area of Bureir the Ottoman Government founded in 1900 the town of Beersheba some four kilometres west of the Biblical site. The town had been deserted since Crusader times and its resettlement was prompted by the necessity of establishing administrative control over the virtually independent Beduin tribes of the northern Negev. The original inhabitants were mostly from Hebron and Gaza.

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[65] Sheet Sheriah (Z. 2.), surveyed by 7th Field Survey Company, Royal Engineers, Egyptian Expeditionary Force, 1918.

[66] In 1934 a son of the late Sultan Abdul Hamid II brought an action against the Government of Palestine before the District Court at Jaffa. He claimed ownership of part of the lands of these villages which had been entered in the Turkish land register in the Sultan's name and had subsequently been registered in the name of the Palestine Government on the establishment of Land Settlement Offices.—In 1931 Muharraqa had a population of 422 and an area of 4850 dunams. Kaufakha had 317 inhabitants and 8560 dunams.—Robinson, *op. cit.* (supra, n. 62), II, p. 388, mentions that the land around Bureir 'belongs to the government.' This might possibly indicate that this village too was resettled at a comparatively recent date.

[67] *Mem.* III, p. 282.

[68] *Op. cit.* (supra, n. 65), sheet Z. 2.; map reference B 16.

[69] According to Braslawsky, *op. cit.* (supra, n. 64, pp. 356, 360, 372), the inhabitants were tenant-farmers on lands belonging to Beduin of the Natush tribe. The information given in E. Mills: *Census of Palestine 1931. Population of Villages, Towns and Administrative Areas.* Jerusalem, 1932, p. 7, that Jammameh consisted in 1931 of one house with six male inhabitants only obviously refers to the Police Post, whereas the population of the village was apparently enumerated with the 1080 members of the Natush tribe of Beduin.

Increasing government control, especially under the *pax britannica,* brought gradually about the transition of the Beduin's way of life from nomadism to semi-nomadism.[70] During the late nineteen-thirties small groups of Beduin became sedentary. Their villages (cf. Fig. 11) were of a type distinctly different from the normal Arab villages in Palestine, the houses were widely spread, the courtyards often not adjacent to one another.[71] There were about ten of them at the time of the termination of the Mandate.—All these attempts at settlement in the Beersheba Basin were very small-scale affairs which did not materially change the overall picture of Beduin occupation. The decisive break came with the advent of Jewish settlement which began in this area in the nineteen-forties, and has to date (1953) led to the establishment of 62 villages.[72]

This change in scale of settlement was the result of a change in technique. The most important natural asset of the Beersheba Basin is its loess soil. This asset could not be properly utilized as long as its cultivation depended on the vagaries of rainfall. It was Lowdermilk[73] who first clearly enunciated the modern potentialities of the area, provided that water could be supplied in sufficient quantity. By the end of World War II the construction of a pipe-line system had begun, and it has been making continuous progress ever since. Today water is to be made available to a village site before the advent of the settlers. This has completely revolutionized settlement in the Beersheba Basin, transforming it in places from extensive to intensive cultivation. It thereby has extended the border of consecutive agriculture and settlement nearly 50 km. southwards.

But this southward expansion represents by no means the maximum expansion of the border. It is well known that the highly skilled agriculturists and irrigation technicians of Nabataean and Byzantine times maintained a considerable number of settlements even further south. Besides villages these included places such as Sbeita and Abda, which were obviously wealthy and flourishing towns in their time, with populations numbering several thousands each. This considerable sedentary population in an area with a rainfall of only 100-180 mm. per annum, was made possible by the most careful husbanding of runoff-water.[74]

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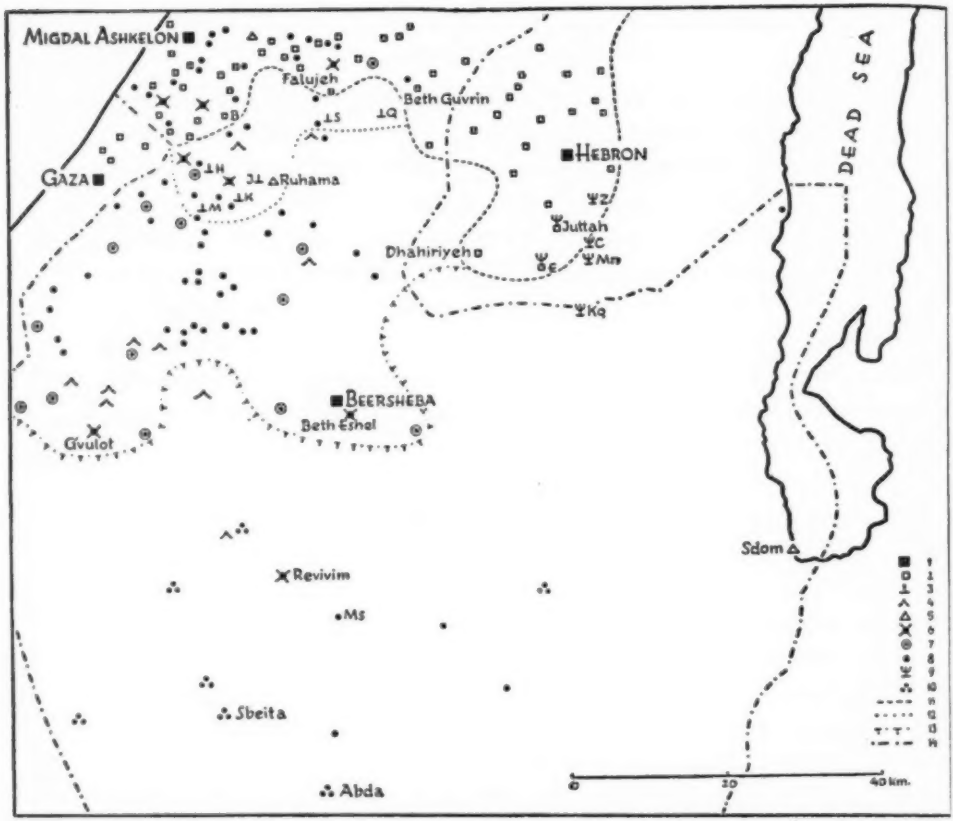
[70] Cf. supra, p. 78.

[71] Cf. the parallel development at the fringe of the Judaean Desert (supra, pp. 74-77).

[72] Mention should be made of the Jewish village of Ruhama which was first settled in 1913. After various interruptions in occupation it was finally re-established in 1944.

[73] W. C. Lowdermilk: *Palestine, Land of Promise.* New York & London, 1944. Especially ch. XII.

[74] C. L. Woolley & T. E. Lawrence: *The Wilderness of Zin.* Palest. Explor. Fund., Annual III, 1914-15; D. Zohary: Ancient Agriculture in the Central Negev, *EI,* 2, 1953, pp. 94-97 (Hebrew).



(Drawn by N.Z. Bar)

Fig. 11. The expansion of the southern frontier of settlement in Palestine since the nineteenth century.

1 Towns
2 Arab villages, 1945
3 Villages established during the nineteenth century
4 Beduin villages established after World War I (Based on reconnaissance in connection with the compilation of the *Palestine Index Gazetteer*, 1945.)
5 Jewish villages established before 1941
6 Jewish villages established 1941-45
7 Jewish villages established 1946-47
8 Jewish villages established after 1947
9 Selected Biblical sites in Hebron Mountains
10 Selected Nabataean-Byzantine sites
11 Permanent frontier of settled area
12 Frontier of continuous settlement to World War I
13 Frontier of continuous settlement at the present day
14 Boundary of State of Israel

Places mentioned in the text are marked as follows:

B Bureir
C Carmel
E Eshtemoa
H Huj
J Jammameh
K Kaufakha
Kq Khirbet el-Qaryatein
M Muharraqa
Mn Maon
Ms Mashabei Sadeh
Q Qubeibeh
S Khirbet Sukkarîyeh
Z Ziph

These fluctuations of the border of the settled area, the historical reasons of which there is no need to discuss here, covered an area of considerable size in a country as small as Palestine. The distance between the line of farthest regression and that of greatest advance is a hundred kilometres. Measuring distances from Falujeh as the northernmost point we obtain: Muharraqa, eighteenth century expansion, 18 km.—G'vulot, modern Jewish extension since the nineteen-forties, 46 km.—Abda, stage of maximum expansion in Nabataean and Byzantine times, 90 km. These 90 km. should be compared with the distance of Falujeh from Haifa—130 km. The latitude of these fluctuations is thus equal to more than half the latitude of the permanently settled part of Palestine.

THE EASTERN BORDER OF SETTLEMENT IN JUDAEA

Even the most cursory glimpse at any map of settlement[75] makes it evident that there is not only a southern border of settlement in Western Palestine but an eastern border as well. Especially in Judaea this border is not less clear than that in the south, and not less rigid. On the contrary, whereas the southern border of settlement always had its bends and indentations, the eastern border is very nearly a straight line. A comparison of the maps shows that there is a considerable number of ancient sites which were inhabited at one time or another in this border belt. They included such well-known Biblical sites as Ziph, Carmel and Maon south of Hebron, which are mentioned (Jos. xv, 50, 55) together with Juttah and Eshtemoa. But important and numerous as these ancient sites may have been along the eastern border of permanent settlement, the fluctuations of the border indicated by them remain within very narrow limits. The distance between the outer line of villages at the present day and the ancient sites mentioned is about five kilometres. The maximum distance is eight kilometres, between the village of Eshtemoa (es-Samu') and Khirbet el-Qaryatein.

Recent advances of settlement within this border region do not extend over longer distances than those attested by ancient sites. It has been mentioned above (cf. pp. 75-77) that a score of small semi-permanent hamlets have gradually become occupied south-east of Jerusalem since about 1930. But none of them has advanced the limits of the settled area by more than 7 km. Moreover, not one full-sized village has been established along the eastern border since 1875.

This behaviour is in striking contrast to the conditions along the southern

[75] Cf. Figs. 3, 4, 8 on pp. 196, 197 and 206 respectively.

border of settlement. Fluctuations of settlement along the eastern border remained well under 10 km. in range, in the south they amount to 100 km. Within the last century about seventy villages and one town have been established in the southern frontier zone without even one single village to match them in the east.

CLIMATIC DIFFERENCES OF THE TWO BORDERS AND THEIR INFLUENCE ON SETTLEMENT

The reason for this profound difference of the two borders is not to be sought in surface features. There are many places of fairly flat relief in the upper part of the Judaean Desert; they are even to be found right to the rim of the rift valley. In normal times they are often cultivated in the appropriate season. But this cultivation is done by the inhabitants of the border villages, it does not lead to the expansion of settlement. In striking contrast to the conditions along the southern border, in the mountains[76] it does not even lead to the establishment of hamlets or even small groups of houses of seasonal occupation (cf. supra, pp. 73-74).

It is evident that the different conditions on the two frontiers are the result of differences in climate. In the south a planetary desert borders with the area of Mediterranean climate. Its existence is due to general conditions of atmospheric circulation. Slight fluctuations do permanently occur in the circulation and in the relative force of atmospheric factors in the two major climatic regions north and south of this border respectively. The fluctuations are of a variety of types, of both short and long duration. These constant changes of climatic factors bring about resultant fluctuations of the border of aridity which moves back and forth over a rather extensive area. This southern border, therefore, is no sharp boundary line but a broad transition-zone.

The Judaean Desert beyond the eastern border of settlement is not caused by decrease of rainfall due to the planetary pattern of atmospheric circulation, but by a sudden drop in rainfall caused by the surface configuration of the region: the sharp and sudden drop of the ground from 1000 m. altitude in the Judaean Mountains to 400 m. below sea level at the Dead Sea, a descent accomplished in a distance of less than 25 km. Here, then, the reason producing desert conditions is fixed. It does not move with slight changes in the relative force of climatic factors, either of short or of long duration. In the east we have a sharp, clearly

[76] Cf. the case of Dura (supra, pp. 72-73).

defined and fixed boundary between two climatic regions, caused by atmospheric processes which are released by the configuration of the ground.

The result is obvious: in the south where the climatic border is a broad transition zone, settlement advances and retreats habitually. The main agent responsible for the location of its limit at any given time is man. Whenever he was an efficient colonizer he succeeded in penetrating farther into the transitional zone. Any slackness on his part drove him out in very short time. In the east the climatic border is clearly fixed in a narrow belt. Here, therefore, climate places definite limits on man, limits which he cannot materially alleviate by improved techniques in agriculture and settlement. This border, therefore, has remained essentially unchanged throughout known history.

SUMMARY

THE pattern of settlement in Palestine is typical of a frontier area, a frontier of settlement conditioned by that major frontier of climate which limits the arid border of the inhabited world. Uplands and lowland plains are two of the major environments of Palestine. Conditions for agricultural settlement are much more favourable in the plains, but more sensitive too. Hence settlement in the uplands is distinguished by a considerable degree of stability, while the lowland plains are marked by extreme fluctuations in the continuity of settlement. Times of deterioration here always brought about an expansion of marshes, with all they entail in impediment of drainage, deterioration of soils and vegetation, and malaria. The distributional pattern of settlement too is much less even and regular in the lowlands than in the uplands.

For long centuries Palestine deteriorated, reaching its lowest ebb at the end of the eighteenth century. The result was a prolonged stagnation of the country. 'There must have been a much greater resemblance between the Palestine of Kitchener and that of the Crusades, than there is between the country as we see it now, and as it is shown on the Palestine Exploration Fund maps.'[77]

Towards the outer fringe of the settled area distances between villages are increasing and the villages become larger in size. The general state of development and security determines the degree to which the interstices between the widespread net of villages are occupied and utilized. The extreme fluctuations of settlement in the lowland plains, the occupation of the interstices of settlement in the frontier region, and the oscillations of the southern border of the settled area are a measure of culture in Palestine. The southward extension of the border of permanent settlement into the Beersheba Basin is an

[77] F. J. Salmon: A Map of Palestine of the Crusades, *PEQ*, 1939, pp. 144-151. Ref. p. 146.

expression of man's ability to settle semi-arid regions: by dry-farming at first, and by large-scale irrigation today. During the prolonged periods when the lowlands were unoccupied or very poorly settled, it was not the land that was bad, but the fact that it was occupied by people or administered by governments who did not make proper use of it. Present-day planned and sustained settlement in the Beersheba Basin is one of the most positive features of modern settlement in Israel.

Climate brings about an interesting difference between the movements of the outer fringe of the settled area of Palestine in the south and the east. In the south settlement oscillated widely in an area of gradual transition of climate, advancing and receding in reaction to the changing colonizing abilities of man. But there was hardly any oscillation across the border towards the Judaean Desert in the east. Here the sharp and narrow climatic border belt imposes definite and fixed limits on settlement. It is the natural limit of climate which delimits the border of settlement here, not man's ability to penetrate more or less into a climatic zone of transition. Beyond the eastern border, settlement is possible in oases only, particularly the irrigation oases in the Jordan Valley. In marked contrast to the fixed eastern border, the southern border is shifting and no oases are to be found in the Palestinian Negev.[78]

[78] The author is indebted to his friend N. Rosenan for many suggestions and constructive criticism of this paper.

NOTES AND NEWS

Israel was host to the SEVENTH INTERNATIONAL CONGRESS FOR THE HISTORY OF SCIENCE which met at Jerusalem from 4th to 11th August 1953. Nearly two hundred scientists attended the congress, of whom almost half represented about a dozen foreign countries. Prof. F. S. Bodenheimer of Jerusalem presided. The business of the congress was conducted in five sections: The History of Mathematics, Physics, Astronomy, Geography and Geology (section I); Chemistry, Mineralogy, Pharmacology and Biology (section II); Technology (section III); Medical Sciences (section IV), History of Science in General and Methodics (section V). In addition to the plenary and sectional meetings the programme comprised visits to different scientific institutions and excursions to various parts of Israel.

The first part of the RAINFALL YEAR 1952 53, like its predecessor (cf. *IEJ*, 2, 1952, pp. 250-252), showed a pronounced deficiency. But whereas in 1951 the dry spell was broken on December 13th and at many places the total of December 1951 was amongst the highest monthly totals on record, dry and *sharavic* weather continued well into January 1953, with critical results for certain branches of agriculture, especially early-sown grains. The situation changed in the northern and central parts of the country in January and in the Jerusalem area and the Negev in February. The months of January, February and March were all well above average. Particular mention may be made of the March amounts at Bêer Tûvya and Jerusalem, 223 mm. each, which exceed the average three to four times. The amount recorded at Jerusalem was the highest March rainfall since 1910. It was exceeded by Ma'aleh ha-Ḥamisha west of Jerusalem which recorded in March 325 mm. Some snow fell in March in the higher parts of the mountains, e. g. Safed and Jerusalem.

Station	Rainfall 1952-53	
	Amount mm.	% of annual average
Coastal Plain, N to S		
Nahariya	662	93
Haifa, Mt. Carmel	673	91
Caesarea, S'dôt Yam	588	96
Tel Aviv, ha-Qirya	575	112
Bêer Tûvya	536	110
Mountain Region		
Safed, Mt. Kana'an	730	99
'Affule	559	120
Jerusalem	498	87
Jordan Valley		
Dafne	606	104
Tiberias	519	112
Negev		
'Urim	121	50
Beersheba	167	74
Mashâvey Sadeh	74	71
Eîlat	69	314

(Cf. *Annual Rainfall Summary, 1952/53.* Israel Meteorological Service, Ser. B, No. 6/R. ha-Qirya, 1953.)

Special mention must be made of the singular rainfall which occurred at Eîlat during the 24 hours beginning at 20.00 hrs. on 31 March 1953, viz. 50.5 mm.! This 24 hourly amount surpassed not only the largest monthly amount hitherto recorded at Eîlat, but was even larger than any annual total registered there.

The rainfall season came to an early end during the first week of April after

which time no notable rainfall occurred.

The heavy rains of January to March improved the crop situation in most parts of the country and brought about very fair and in part even good yields. In the Negev only summer crops gave a good harvest.

The relaxation of intensive measures against LOCUSTS after the end of World War II led to renewed serious threats of this pest on Near Eastern countries. In the spring of 1952 serious locust invasions were reported from Iran, Iraq, Syria and Hashemite Jordan. In Jordan widespread infestation occurred early in April both in Eastern and in Western Palestine, followed later on by the Jebel Druze in Syria. Late in April and in May a few swarms were observed in Israel, mainly in the southern coastal plain, but they caused no serious damage.—In February 1953 locusts again invaded Jordan from Saudi Arabia. Very extensive parts of Eastern Palestine and of the 'Arava were infested, including its western side in Israel. During the second half of April locusts were reported from Lake Tiberias. The only serious infestation in Israel occurred late in May and in June in the north-western Negev.

A joint expedition of the HEBREW UNIVERSITY and the DEPARTMENT OF ANTIQUITIES worked late in 1953 under the direction of Dr. M. Stekelis in the second season at the *Kabbara* cave near Zikhron Yaaqov. After ascertaining that the terrace in front of the cave did not contain archaeological remains *in situ*, the expedition began to work inside the cave. Two strata of Upper Palaeolithic were found, containing a great quantity of flints and animal bones; the latter included bones and teeth of bear, donkey, hyena, squirrel, etc. In the Middle Palaeolithic stratum, which is several metres thick, was found a 'floor' with remains of Mousterian culture; on it were constructions of rough stones, which contained smaller stones, ashes, and much bone. Near these was found the skull of a predatory animal, and near it bones arranged deliberately, perhaps as an 'offering'. All this was separated from the general area by a row of stones. The excavators are about to start the clearing of another 'hall', of a size as yet undetermined. The Mousterian objects found are of particularly good quality and technique.

In connection with some new constructions south-east of Beersheba, which include the site called *Khirbet el-Biṭâr* on the banks of the Besôr Valley, the DEPARTMENT OF ANTIQUITIES conducted excavations directed by Mr. M. Dothan from January to April 1953. A small mound examined in the centre of the site was found to contain Chalcolithic remains (fourth millenium B. C.). In the topmost level were remains of rectangular buildings on foundations of rough stone blocks; the middle level contained a circular construction 7 metres in diameter, and in the lowest level were circular pits apparently used as storage-bins. A pottery 'churn' of unusual size (decorated with purple painted stripes) and a piriform mace-head of haematite were outstanding among the very numerous small objects found.

The whole settlement appears to have been relatively short-lived. The objects

found indicate a close relationship to Ghassulian culture, although there are forms and decorations typical of the northern Negev, or even of Kh. el Bitâr only. This is the first occurrence of a Chalcolithic settlement of so highly developed a standard in Western Palestine. The circular house, the largest so far found in this country, may have served as the central silo of the whole region, and thus may indicate the sedentary-agricultural character of the population at that period (circa 34th-32nd centuries B.C.). Quite possibly the topmost level of this settlement corresponds to the 'Jezreel culture' which preceded the first stage of the Early Bronze Age in northern Israel.

In October 1953 Mr. M. Dothan cleared, on behalf of the DEPARTMENT OF ANTIQUITIES, a tomb accidentally discovered in the vicinity of *Tell Asawir* (usually identified with Arruboth at the southern issue of the Megiddo Pass). The tomb had two distinct levels: an upper of the Hyksos Age and a lower of the end of the Chalcolithic Age or the beginning of the Bronze Age. The upper tomb was a mass burial; it consisted of a number of skeletons with much pottery corresponding to stratum D of Tell Beit Mirsim, i.e. from the end of the 17th century to the first half of the 16th century B.C.

In the lower burial the remains were indistinct, but it was evident that it was also of the mass-burial type. This level had a very great quantity of pottery which was so far typical of one place only, namely, Tell Far'a near Sichem, where it was attributed to the 'Enéolithique supérieur'. In addition to the pottery the tomb contained flints, beads and necklaces. The presence of 'grey burnished' ware, which belongs to the end of the Chalcolithic period in Northern Israel, is of special interest, as it appears here together with painted ware typical of the South. The lower burial is to be attributed apparently to the transition from Chalcolithic to the Bronze Age, i.e. ca. 3200 B.C.

In April 1953 Mr. Y. Aharoni, acting on behalf of the ISRAEL EXPLORATION SOCIETY and assisted by a group of volunteers, made an exploratory sounding in the tell of *Kadesh Naphtali*, at a point where the modern road cuts into its slope, beginning from a brick-wall visible in the cut. The trench was 17 m. long and 1.25 m. broad, descending by steps. The debris at that spot was found to be 11 m. high. The brick-wall belongs to an early stage of the Early Bronze Age; it stands on a burnt level, 0.50 m. above the virgin soil; its width was 5.40 m. Floors and various installations were discovered all along the trench. The following strata were ascertained:

Arab	3.00 m.
Hellenistic	0.75 m.
Iron Age I-II and Late Bronze	0.75 m.
Middle Bronze	1.25 m.
Early Bronze	5.25 m.

Sub-strata could be defined within the main strata, especially in the big accumulation of Early Bronze Age debris. These included a stage of Early Bronze III with Kh. Kerak Ware, Early Bronze II with combed, burnished and band-slip ware and many typical sherds of Early Bronze I.

In August Mr. Y. Aharoni carried out a systematic survey of an area in *Upper*

Galilee, extending from Peqi'in and Beit Jann in the south to Iqrit and el-Mansura in the north. 46 sites were examined and classified as follows:

2 artificial mounds with pottery from Early Bronze Age to the Byzantine and Arab periods.

18 Iron Age settlements.

31 sites from the Hellenistic-Roman-Byzantine periods, 4 of which were settled already in the Iron Age; some of them continued to exist into the Arab period.

5 settlements were founded in the Arab period, including 3 Crusader fortresses.

The Tumuli West of Jerusalem. — Mrs. Ruth Amiran of the Department of Antiquities studied a group of small tells west and south-west of Jerusalem during June-August and November, 1953, on behalf of the ISRAEL EXPLORATION SOCIETY and the DEPARTMENT OF ANTIQUITIES. These small tells of regular conical shape have attracted the attention of archaeologists since the beginning of explorations in Palestine (*Survey of Western Palestine, Mem.* III, pp. 156-7; W. F. Albright, *BASOR*, 10, 1923, p. 2). Of special interest is the relation of this singular group of tumuli to various regions in Anatolia, where burial in tumuli, a custom probably of Pontic origin, was practised by the Phrygians and by other peoples. (For a concise discussion of the problem, cf. K. Bittel: *Kleinasiatische Studien.* Istanbul, 1942, pp. 88-100.) Fifteen tumuli of different sizes have now been mapped in this region; others situated nearby on the crests of the hills above Beit Jala, Deir Kirmizan and Battir seem to belong to the same group. A single one is situated in the Shephela near Har-El.

Excavation of one of the tumuli has revealed an enormous heap of stones, 31 m. in diameter and 6 m. high, the base of which is encircled, probably for constructional purposes, by a ring-wall forming a polygon of 17 sides. The ring-wall is well built of dry masonry, and is composed of two, in some parts of three belts. Two entrances are cut in the ring-wall; one in the east contains a staircase leading up to the inside; one in the west-north-west contains two steps leading down to the inside. In the eastern quarter of the circle is a higher plateau built up by stones and earth and a retaining wall, fitting the configuration of the ground. The plateau contains a small pit of roughly hexagonal shape, an elongated knoll and a pavement. This is exactly on the level of the highest step of the staircase which apparently led to this installation. The pit was found full of earth and small particles of coal. An extensive burning place filled with ashes and coal was found to the south of the plateau. Sherds of the last century of the Judaean Kingdom, which were found among the stones of the filling, assign the tumulus to this period. Most of the comparable material from outside Palestine obliges to explain this group as burial-mounds, but evidence such as the seven tumuli near Paleoskoutella in Cyprus, where cult-places have been found buried under heaps of stones (*Swedish Cyprus Expedition*, I, pp. 416-438), should not be disregarded. Further excavation and investigations are in progress.

After an interval of over a decade the excavations at *Bêt She'arîm* were resumed by the ISRAEL EXPLORATION SOCIETY under

the direction of Dr. N. Avigad. In a short season of about four weeks, the excavators cleared a well-preserved gate which was discovered accidentally last year in the NW part of the town. The relation of this structure to the adjacent buildings of the Late Roman and Byzantine periods was also explored; one of the rooms in the latter contained the remains of an oil press. Excavations on the lower NW slope of the town-hill resulted in the discovery of two large catacombs of the well known Bêt She'arîm type (with some slight variations), dating from the third to fourth centuries A.D. A third catacomb (second to third centuries) was, however, of a different kind; it had a triple arched façade built in ashlar against the rock-face. A great number of Greek inscriptions was found in these tombs, testifying to the burial of Jews from various cities on or near the Syrian coast, such as Antioch, Byblos, Tyre, etc. Some of these inscriptions, as well as those in Aramaic and Hebrew, show interesting new formulae; two seem to refer to rabbis mentioned in Talmudic literature.

Mr. B. Rabani excavated, on behalf of the DEPARTMENT OF ANTIQUITIES, a Roman-Byzantine bath in the area of Roman *Tiberias*. The part cleared includes two halls (10 × 20 and 5.5 × 9 m. respectively), both paved in coloured mosaics (partially preserved) with representations of animals (elephants, leopards, griffins, donkeys, birds and fishes) and flowers. Some of the cubes are of yellow, blue and green glass. The rest of the bath includes a brick oven (3 m. high, 2.5 m. long) connected with an hypocaust cellar of the usual type, with vaults (supporting a marble pavement) resting on brick columns, and pipes passing through the latter. The upper rooms of the hypocaust had sunk and drained bath tubs, 1 m.-1.20 m. sq., some still paved with marble, others with mosaic. The minor finds included one Judaeo-Greek and one Aramaic inscription, also some sherds inscribed with Greek letters and numerals. Part of the foundations seem Roman. The building was used as a bath in the Byzantine period and continued to be used as such into Arabic times.

At *Beth-Shan*, ca. 200 m. south of the Roman Theatre, Mr. N. Zori excavated on behalf of the DEPARTMENT OF ANTIQUITIES a complex of buildings belonging to four different levels of the Byzantine period. A street and two workshops adjoining it were cleared. In one were found bones and bone objects (spindle-whorls and games) and in the other heaps of tesserae. In one of the two rooms of an earlier level was found a table of greenish stone and in its stone pavement part of a Greek inscription. Underneath the pavement was a juglet with a hoard of 414 coins dating from Valentianus II (364-375) to Theodosius II (408-450). Below this to the virgin soil no earlier remains were revealed.

Also at *Beth-Shan*, 250 m. west of the Roman Theatre, Mr. Zori excavated a complex of 22 rooms of a large Byzantine insula. Three sets of steps, rows of columns and vertical pipes point to the existence of an upper floor. A fine fountain, near a toilet with water channels and drains, indicates the high standard of living of the period. The main entrance

(from the end of a street) was 2.36 m. wide (10 cm. less than the width of the western gate of Tell el-Hosn). Vessels, tools and other objects of pottery, bronze and iron, glass and stone were found in abundance and in a rich variety of forms and decorations. They are similar to those of the Byzantine levels of Antioch, the Beth-Shan tell, Jerusalem, Mount Nebo and in particular the royal tombs of Ballana and Qustul in Nubia. Two more levels have been revealed in this site belonging apparently to the 4-5th centuries A. D. Below two of the rooms of this building down to the virgin soil, Chalcolithic remains were found. Pottery (all in fragments) included jar-necks of upright shape and sharp rims, flat bases, all shapes of loop-handles. Encircling bands of pottery were roughly shaped or impressed with fingers round the loop-handles, the necks and the body of the vessels. The flint implements found with this pottery include: nuclei, arrow-heads, sickle-blades, etc. The pottery is very similar to that of Beth-Shan XVIII-XVII, and especially to that of Tuleilat Ghassûl.

At *Bêt ha-Šiṭṭah* Mr. Y. Aharoni, on behalf of the DEPARTMENT OF ANTIQUITIES, excavated what appears to be a rural installation of the Late Byzantine or Early Arab period. It consists of a paved courtyard, with a wine press to the west, store rooms to the north and two rooms to the east, one of which was paved with mosaics and ornamented with a large cross. The pavement of the other was ornamented in a carpet-like design of small squares, each containing a different ornament, geometric or vegetal. The latter room had a small apse to the east.

At *Jerusalem* (Beit Ṣafafa) a small funerary chapel and mausoleum ewer excavated by the DEPARTMENT OF ANTIQUITIES under the direction of Mr. Y. Landau. The chapel, 7×8 m. in area, was paved with mosaic and had columns with Corinthian capitals. A square niche in the western wall was inlaid with a mosaic inscription in four lines commemorating a certain Samuel and his family. The inscription is dated in the year 206 of an hitherto unknown (Constantinian?) era of Jerusalem. The inscription goes 'backwards', i.e. it begins with the fourth line, and ends with the first. The mausoleum adjoining the chapel had a floor divided into eight compartments, which contained six lead coffins (including two children's coffins). The coffins were decorated with garlands, ropes and crosses.

From June to October, 1953, the Metropolitan Museum of Art, New York, housed an exhibition 'From the Land of the Bible', arranged by the Association of Israel Museums and the AMERICAN FUND FOR ISRAEL INSTITUTIONS, with the active assistance of the Department of Antiquities, the Ministry of Education and Culture and many public and private collections in Israel. Dr. P. Kahane of the Deparment of Antiquities was in charge of the exhibition. The exhibition was arranged in eight rooms, each devoted to a special subject, such as prehistory, the Canaanite Age, the Israelite period, the Hellenistic to Byzantine times, etc.

Among the outstanding objects may be mentioned a representative set of objects and figurines related to the Yarmuk.

ian culture, some of the Execration texts (lent by the Brussels Museum), ivories from Megiddo, anthropomorphic coffins from Beth-Shan, the Tell Qasîle ostraca, some leaves from the Dead Sea Scrolls, the Tabernacle relief from Capernaum, the Samaritan mosaic inscription from the Shaalbim synagogue and the complete mosaic of the 'Sacrifice of Isaac' from Beth Alpha. The coin and seal sections (mainly from the Reifenberg collection) were of rare completeness. The monumental porphyry statue from Caesarea, set up in the vestibule of the Museum, served as an introduction to the exhibition. A number of American museums generously lent material from their collections and thus contributed to the comprehensive character of the exhibition.

The ISRAEL NUMISMATIC SOCIETY held its Third Convention on 26-27 June 1953 at Jerusalem (cf. *IEJ*, 1, 1950-51, p. 251; 2, 1952, p. 255). The meeting was devoted to papers on ancient coins of Jerusalem. The following papers were read: *The Periods of Coinage in Jerusalem* (Y. Meshan), *The Chronology of the Hasmonaean Coins in the Light of Palaeographical Research* (A. Kindler), *Were the Coins of the Roman Procurators struck in Jerusalem?* (M. Narkiss), *The Coins of the First War against Rome* (Prof. A. Reifenberg), *The Coins of Aelia Capitolina* (L. Kadman), *Early Arab Coins from Jerusalem* (U. Ben-Horin), *The Coins of the Crusader Kingdom of Jerusalem* (M. Narkiss).

The Ninth Annual Archaeological Convention of the ISRAEL EXPLORATION SOCIETY, 'The Land of the Negev', was held at Beersheba from 25-29 September 1953. A detailed report of the conference including summaries of the papers read will appear in the next number of this *Journal*.

Obituaries: Sir CHARLES F. ARDEN-CLOSE, late Chairman of the Palestine Exploration Fund, died on 19 December 1952, at the age of 87 years. Sir Charles was a man of rare gifts: soldier and eminent cartographer, he combined the approach of the exact scientist with a broad humanist and philosophical outlook. He was Chief of the Geographical Section of the General Staff (1905-1911), and from 1911 to his retirement in 1922, Director-General of the Ordnance Survey. Archaeologists owe a special debt to Sir Charles for his appointment of an Archaeological Officer to the Ordnance Survey: O. G. S. Crawford. Sir Charles was President of the Royal Geographical Society from 1927 to 1930. For many years he was one of the chief representatives of his country at the International Geographical Union, acting as Secretary-General, and from 1934 to 1938 as President. His major contribution to the work of the Union lay in the field of the International Map of the World, 1:1 Mill., with which he had been connected since his days at the GSGS. From 1930 to 1945 Sir Charles was Chairman of the Palestine Exploration Fund, in whose activities he had taken a keen interest for many years. He wrote a number of papers on subjects relating to this country, of which the one on Rainfall in Palestine and his last paper on the Cave of Machpelah (*PEQ*, 1951) may be mentioned.

The Reverend Dr. HERBERT DANBY, Regius Professor of Hebrew at Oxford University, died in his sixty-fourth year. Prof. Danby was born at Leeds, and was educated at Keble College, Oxford, graduating in Oriental languages and theology (D. D. 1923). He entered Holy Orders in 1914, becoming curate at Hawarden in 1914 and Librarian at St. George's in 1919. From 1921 to 1936 Rev. Danby was resident canon at St. George's cathedral, Jerusalem. His task was, *inter alia*, that of keeping in touch with the Jewish community of the Holy City and Palestine in general. A distinguished scholar, equally proficient in Biblical and modern Hebrew, Prof. Danby was one of the founders of the Palestine Oriental Society, editor of the *JPOS*, 1920-1936, and President of the Society in 1934. He was also Dean of the Board of Higher Studies of the Department of Education set up by the Mandatory Government, from 1923 to 1936. During his stay in Jerusalem Prof. Danby produced the first complete and handy translation of the Mišna into English; he also translated Prof. Klausner's *Life of Jesus*. From Jerusalem Prof. Danby passed on to the chair of Hebrew at Oxford, where he continued to the day of his death.

Dr. PAUL SOLOMONICA, Consulting Geologist, was killed in a traffic accident on 21 September 1953. He had studied at Vienna University under F. E. Suess, where he received a thorough academic and field training. Having been connected for some years with the Geological Department of the Hebrew University, Solomonica took a leading part in the geological exploration of the Negev and the Dead Sea region. It was near the Dead Sea that by pure accident he missed death when G. S. Blake with whom he was working at the time was murdered by Arab bandits in 1940. Solomonica was an excellent field geologist, distinguished by his powers of endurance, and a keen and painstaking investigator in the fields of tectonic geology and stratigraphy. As he worked for various prospecting companies, most of his reports have not been published. Amongst his published writings mention should be made of the paper by L. Picard and Solomonica: On the Geology of the Gaza - Beersheba District, *JPOS*, 16, 1936, pp. 180-223, which was based on field-work by Solomonica. With his untimely death at the age of 45 Israel has lost one of its most serious and experienced workers in the development of the country's mineral resources.

REVIEWS

Gordon, Cyrus H.: *Introduction to Old Testament Times*. Ventnor Publishers, Inc., Ventnor, N. J., 1953. VII + 312 pp. Indices. $4.75.

This volume is an up-to-date contribution to the subject. The profound philological and literary scholarship of Prof. Gordon —evident in his studies of Ugaritic literature and its parallels to the Bible—is used here to illuminate the peculiar and unique features of ancient Hebrew culture. For the author of such a book the main problem is to present the sometimes debatable and tentative results of recent research in a manner useful both to the advanced student, and to the beginner. To achieve this end the author has preferred to avoid polemics on controversial subjects, such as the Exodus, the conquest of Canaan or the development of monotheism. Apparently on the same principle he has refrained from quoting any references and from commenting upon previous research on his subject.

The 'Introduction' had also to face another problem, viz. how to harmonize the historical with the Biblical sequence. It seems that Prof. Gordon decided in favour of the latter, following rather unhesitatingly the canonical order of books, chapters and, in many cases, even of verses.

A distinctive feature of this book is the incorporation within the framework of the historical narrative of special excursuses, such as the one on Ugaritic literature and that on the discoveries of Karatepe.

The 'Introduction' begins with some well-arranged and interesting 'Prolegomena', in which a brief discussion of the written and non-written sources is followed by an explanation of how to use them in building up a historical picture. The 'Introduction', however, does not conform to the principles set out in the 'Prolegomena', for the author has omitted almost entirely the unwritten sources, which are of vital importance for the study of Old-Testament religion and society.

The next chapter, named 'In the Beginning', tells about the Biblical epics of Creation and Deluge, comparing them with their Babylonian and Assyrian parallels. Here the author follows what seems to be a fixed principle with him: he gives an impartial and often uncritical relation of the Biblical narrative (sometimes even adopting the point of view of the ancient narrator), while keeping the critical remarks to the foot-notes. The actual historical account begins with chapter III which deals with the history of Egypt and of western Asia from the Old Kingdom to the Amarna Age. Gordon follows the chronological scheme of Weidner (*Archiv f. Orientforschung*, 15, 1951, p. 85 ff.), which is based on Poebel's unemended date for Shamshi-Adad I. Accordingly, the date for Hammurabi is 1704-1664, which would make him a contemporary of the first Hyksos rulers of Egypt, and would lower the lowest possible date given by Albright by another 24 years.

The introductory chapters are followed by two chapters on 'Ugarit' and 'Homer and the Amarna Age' (chapters VI-VIII). The last-named is a most important dis-

cussion of the affinities between the Homeric epics and the Ugaritic and Biblical literature. (Cf. *Amer. Journ. of Archaeol.*, 56, 1952, pp. 93-94.) After a somewhat elaborate examination of the forms of Homeric style, the metaphors and the Homeric way of life in general, the author reaches the important conclusion that 'Homer and the Ancient East have a common denominator' (p. 99).—'The Patriarchal Age' forms the first of ten historical chapters (chapters VIII-XVII) covering the period from the Hebrew origins to the Macedonian conquest of Palestine. Here, it seems, one has to choose on principle whether to follow the historical-chronological sequence or the order of the Biblical account. Apparently the author of the 'Introduction' decided to accept the latter, and to adhere to the Biblical data, often quite rigorously. Thus already in the beginning of the historical setting, Gordon considers the five generations (=about 150 years) from Abraham to Moses as representing the actual gap between the first Patriarch and the Exodus. Consequently Abraham is shown as a completely historical figure born in the latter part of the XVth century (p. 103). One of the author's basic ideas is that YHWH was already known to the Patriarchs, since he holds that this name occurs among the Amorites in Mesopotamia and that YW in Ugarit 'may stand for the same divine name' (p. 25). The Philistines in Genesis xxvi are treated as an early wave of that Aegean stock brought to the shores of southern Palestine in the Mycenaean Age. The author uses a rather vague expression in calling them 'Caphtorians', while the statement, that 'their (=Philistine) pottery has been found not only on the Philistine plain... but even in the cities of Beth-Shan and Jericho... going back to about 1500' (p. 109) would seem to imply that no distinction is made between the Iron Age 'Philistine' pottery and its Bronze Age Mycenaean prototypes. The Creto-Philistian influence is traced in Biblical Hebrew, where Gordon suggests that ירדן and כובע are loan words from 'Cretan' (p. 108-109). The same chapter contains a short note on the Habiru problem, where the author contrary to the commonly held opinion, denies the identity of Habiru with the Hebrews on purely linguistic grounds, without discussing the other aspects of this thorny problem (cf. C. Gordon, *Jahrb. f. kleinas. Forsch.*, 2, 1951, pp. 51-52).

Chapter IV is concerned with the Egyptian bondage, the Exodus and the Conquest. The author maintains that Jacob's sons migrated to Egypt in the early part of the 13th century (that would mean in the midst of the Hittite-Egyptian struggle!), and that the Exodus took place at the end of the reign of Ramses II. No date is given for the conquest, but, apparently following Vincent, the author dates the fall of Jericho to the very end of the thirteenth century (pp. 131-132). In presenting the account of the Conquest, the 'Introduction' seems to treat the pragmatic traditions of Joshua as authentic historical evidence, even going so far as to state that 'the impressive conquest of Joshua extended down to the border of Goshen' (p. 153) and asserting that 'Joshua then proceeded to parcel out land to the twelve tribes' (p. 134).

In telling the story of the subsequent periods (chapters X-XVI), the book keeps again to the spirit and sequence of events

of the Book of Judges and 1-2 Samuel, excluding, apparently on principle, the sometimes more reliable account of the Chronicles. In these chapters, interrupted only for a valuable translation of Azitawadd's Phoenician stelae from Karatepe, the reader will find a number of weighty remarks in the field of textual criticism and Biblical history. Some of them deserve special attention; on p. 209 Prof. Gordon pronounces 'Judah', in the *crux interpretum* of 2 Kings xiv, 28, to be the northern יאודי. But this would imply that Jeroboam II had conquered Hamath and defeated that Hittite kingdom; such an expansion of Israel seems most unlikely even in the days of Assyria's temporary weakness. Neither does the identification, widely accepted, of Azriau, King of Yaudi, with an unknown ruler of יאודי seem definitive, since Landsberger has actually demonstrated that Ya'diya is the correct form of the latter (*Sam'al* I, notes 42, 76) and especially after Thiele and Albright have brought forth weighty arguments in favour of the identity of Azriau with Azariah of Judah (cf. *JNES*, 3, 1944, p. 155 ff; BASOR, 100, 1945, p. 18 ff.).

Another controversal point is Gordon's interpretation of the reform under Josiah (pp. 238-243). Here he follows the agreed view that the reform began in the 18th year of Josiah, disregarding the more probable account of 2 Chron. xxxiv, 3-7, where the 12th year is taken as the initiation of the reform (= 628/7). Accordingly these deeds of Josiah are not represented by Gordon as the apparent manifestation of some kind of national and religious renaissance, which had swept Judah a few years after the death of Assurbanipal (633/1, following Parker-Dubberstein's chronology). He sees in them a sign of religious activity emanating entirely from the discovery of the Law Code in 622/1. Finally, the puzzling statement that 'one of the most sweeping effects of Josiah's reform was the change of the nation into a church' (p. 243) may well serve to illustrate the whole neo-Orthodox approach of this 'Introduction' to Biblical history.

The book ends with a chapter on the Persian period (chapter XVIII), where interesting remarks on the composition of Esther (p. 278) and Daniel (p. 286) are made. A most valuable Appendix on literature and historiography closes the 'Introduction'. Gordon suggests that originally, in their primeval form, the ancient Hebrew epics, such as the Jacob-Joseph cycle, were transmitted in verse, and that historical writing, initiated with David, still kept some of the epical elements. These, like the elevation of David, or his romantic marriage to Saul's daughter, are traced and compared to the parallel motifs in the Ugaritic song of Keret (cf. *JNES*, 11, 1952, p. 212 ff). Thus, Prof Gordon offers here some stimulating ideas in the study of the development of ancient Hebrew composition.

H. FRUMSTEIN-TADMOR

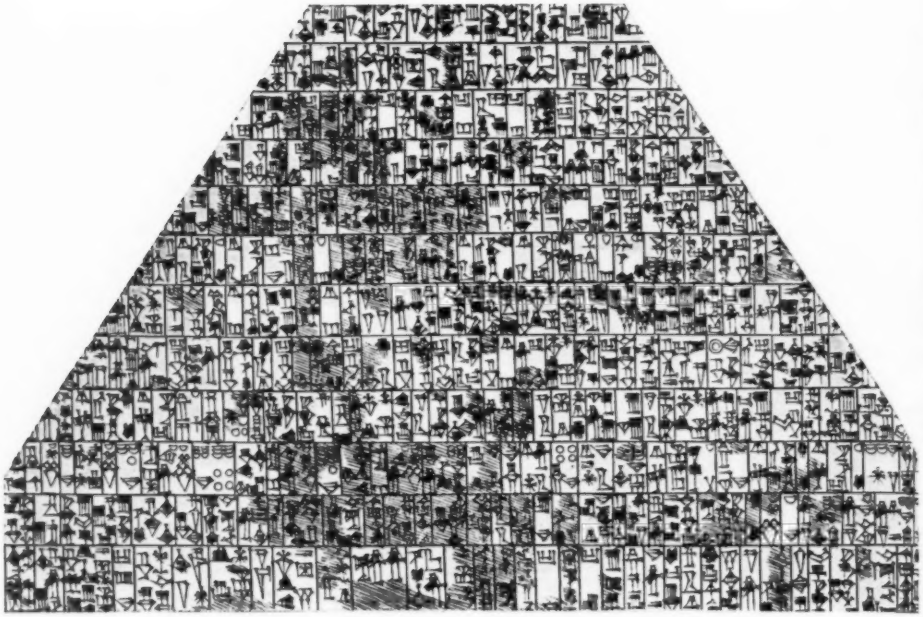
ERRATA

Les lecteurs sont priés de faire les corrections suivantes dans l'article de M. Etienne de Vaumas: La Palestine—Étude morphométrique, paru dans notre *Journal*, 3, 1953.

p. 81, 15e ligne il faut lire: soit un peu *moins* de la moitié
p. 84, 8e ligne: la courbure inférieure *ne* se manifestant plus que
p. 87, 28e et 29e ligne: soit un coefficient de massivité de 65%
p. 89, 20e ligne: Régions 20 et *22* sur la carte Fig. 1
p. 180, dernière ligne du tableau, 2e colonne:
Massif palestinien 316 m. *31%* 436 m. 42%
p. 184, 30e et 31e ligne: Limite méridionale *du synclinal* du Hasbani
p. 190 dans le tableau: Versant méditerranéen, 2° Massif palestinien, l'altitude moyenne du 'Haut pays central' par rapport à la Méditerranée est *369 m.*

A fragment of a limestone stela portraying Eannatum, Ur-Nanshe's warlike and empire-minded grandson who spread the rule of Lagash far and wide by force of arms. In the upper register he is shown leading his army over the dead bodies of the enemy; the Lagashites advance to attack in a solid phalanx under the protection of huge shields. In the lower register Eannatum is seen riding in a chariot at the head of his marching soldiers who have now discarded their shields and carry their lances high on their shoulders.

PLATE 14



The Sumerian text of the Urukagina tax-reform document inscribed in cuneiform (wedge script) on a clay cone excavated in Lagash and copied by the recently deceased François Thureau-Dangin, who was the first to translate it. The interpretation of the text presented in this article is the result of a new translation of this almost 4,500 year old document prepared by the writer, largely as a result of his researches under Arno Poebel, of the Oriental Institute of the University of Chicago.

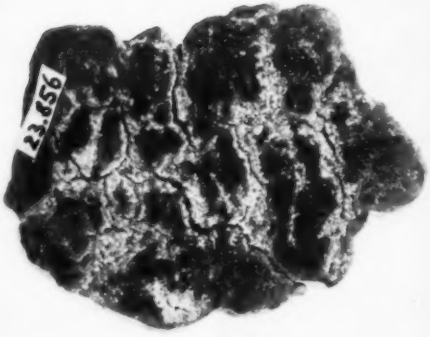
A: Size of No. 1—1:1.9, Nos. 2-4—1:1.7.

B: Inscription from Caesarea (cf. p. 237).

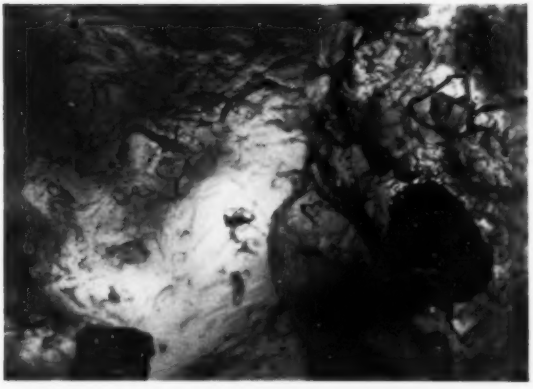
A

A, B: General view of the sample of Jaffaite from both sides.

Courtesy of the National Museum, Prague.



B



C: Photomicrograph of Jaffaite.

Author's Photo.